THE EFFECTS OF PARENTS' COLLEGE SAVINGS ON COLLEGE ATTENDANCE AMONG STUDENTS FROM FAMILIES WITH LOW-INCOMES: THE MEDIATING ROLE OF PARENT'S DISCUSSIONS ABOUT COLLEGE WITH THEIR CHILDREN

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Abstract

College savings are a promising strategy to pay for higher education, given the high college costs and inadequate financial aid available to students today. Asset theory suggests college savings have financial as well as psychological and social effects on children's educational outcomes. This dissertation study focuses on the role of parent-child discussions about college as a potential mediator in the relationship between savings and college attendance. Also, the direct association between these discussions about attending college and children's college expectations was examined. The Wisconsin Model of status attainment provides the organizing framework for this study as it encompasses the most important factors at key moments in an individual's trajectory to educational attainment.

The Education Longitudinal Study (2002) was utilized with the sample restricted to families with incomes at or below 185 percent of federal poverty guidelines. The total number of sample students is 3,997. Depending on the pattern of missing data, the deductive and multiple imputation approaches were applied. Since the outcome variable is polytomous, multinomial logistic regression analysis was used. To test mediation effects, both the Baron and Kenny approach and multiple mediation bootstrapping were employed.

Results of this study suggest college savings are significantly and positively associated with parental college expectations, parent-child discussions about college, and two-year college attendance. Both parental expectations and college discussions mediate the relationship between savings and college attendance. These findings suggest college savings programs could be a promising strategy to help students access a post-secondary education. Social workers in school settings need to encourage families to develop college savings accounts by providing relevant information and connecting these families to financial service institutions.

Another key finding is that discussions about attending college are associated with children's own expectations and ultimate college attendance. Not all parents are comfortable talking with their children about going to college, especially without direct college experiences themselves. Developing programs to facilitate parent-child discussions about attending college is suggested so that social workers can help families to engage in productive discussions by providing communication guidelines and teaching parents' ways to encourage their children without pressuring them.

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CHAPTER 1.0 INTRODUCTION

Tonight, I ask every American to commit to at least one year or more of higher education or career training. This can be community college or a four-year school; vocational training or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma. ⋯That's why we will provide the support necessary for all young Americans to complete college and meet a new goal: By 2020, America will once again have the highest proportion of college graduates in the world.

-- President Barack Obama, February 24, 2009 from the State of the Union Address

Despite the growing importance of a college education, high college costs and inadequate financial aid put post-secondary education out of reach for many students particularly those who are from families with low-incomes (Hoxby & Avery, 2012). Based on asset theory, college savings have been considered a promising strategy to pay for college (Sherraden, 1991; Newville, 2010). Existing studies have found that holding assets, such as savings, have an economic as well as psychological and social effect on educational attainment (Conley, 2001; Elliott & Beverly, 2012 a, b; Huang, Guo, Kim, & Sherraden, 2010; Song & Elliott, 2012; Williams Shanks & Destin, 2009, Zhan & Sherraden, 2010). Yet, the impact of parents' college savings on attending two-year or four-year colleges among students who are from low-income families has not yet been fully explored.

This dissertation study is designed to examine the association between parents' college savings and their children's college attendance after controlling for significant demographic and background characteristics. In addition to the direct relationship between college savings and two-year or four-year college attendance, various indirect pathways linking parental savings to college attendance are also explored. More specifically, this study hypothesizes the mediating role of parents' and children's college expectations on the relationship between savings and college attendance among students from families with low-incomes. Another potential

mediating effect is also examined—parent-child discussions about attending college. In keeping with my interest in the pivotal role of parent-child discussions, this study also investigates the influence of these college discussions on children's college expectations as well as ultimate college attendance.

Since nearly all existing studies linking college savings and college attendance have focused exclusively on a single population, such as African Americans alone and/or white or Hispanics alone, this dissertation study includes all major ethnic groups. Even though this present study is not designed to identify the effect of college savings and proposed mediators for each ethnic group, education gaps between ethnic groups from low-income households are discussed.

To test the research questions of this study, multinomial logistic regressions were applied by analyzing a nationally representative data set, the Education Longitudinal Study of 2002 (ELS:2002). For testing the mediation effect of college expectations and parent-child discussions among children from low-income households, not only the Baron and Kenny approach but also multiple mediation bootstrapping method were employed. Findings support justification for the development of nation-wide asset-building social policies and structured college savings programs for families with low-incomes.

1.1 STATEMENT OF SOCIAL PROBLEM

Higher education plays a pivotal role in achieving economic self-sufficiency and upward mobility in the United States (Immerwahr, Johnson, Ott, & Rochkind, 2010). The Pew Charitable Trusts (2012) have reported nearly 20 percent of students from families in the bottom income quintile who earn a college degree move into the top two income-quintile groups, suggesting educational attainment can narrow economic disparities and serve as a social

equalizer. In reality, the college attendance gap appears to be structured along the lines of income and ethnicity. That is, despite the desire among many minority children from families with low-incomes to access higher education, white and Asian students from families with higher incomes are more likely to attend college when compared with their low-income and African American or Hispanic counterparts (National Center for Education Statistics, 2014). Thus, higher education can also be considered a key contributor to class stratification.

In 2012, while 81 percent of students from high-income households attended college, only 50 percent of students from low-income households did so (National Center for Education Statistics, 2014). Even among high-achieving students, students from households with low-incomes enrolled in four-year colleges at half the rate of their high-income peers, suggesting not all children have the same access to college even after taking into account their desire, ability, and effort (National Center for Education Statistics, 2010; Elliott & Song, under review). In terms of ethnicity regardless of income level, among recent high school graduates[1], 81 percent of Asians, 65.7 percent of whites, 71 percent of Hispanics, and 56.4 percent of African Americans attended a two-year or four-year college in 2012 (National Center for Education Statistics, 2013, Table 302.20). While the college attendance rate of Hispanic high school graduates has surpassed that of whites for the first time in history, minority students still have a higher high school dropout rate than whites (Pew Research Center, 2013). Moreover, in terms of college attendance rates among students living at or below poverty level, while 62 percent of low-income Asians and 51 percent of low-income whites attended college, 37 percent of both Hispanic and African American students from households with low-incomes did so (Institute for

[1] The recent high school graduate refers to individuals ages 16 to 24 who completed high school in the calendar year of the survey (National Center for Education Statistics, 2013).

Higher Education Policy, 2010). Hence, minority students from families with low-incomes remain underrepresented in college attendance.

According to the National Center for Public Policy and Higher Education (2011), "(s)tudents who enroll in community colleges are more likely to be low-income, the first in their families to go to college, and members of underrepresented racial or ethnic groups" (p.2). While 44 percent of college students from low-income households (families earning less than $25,000 annually) began their post-secondary education at a two-year college, only 15 percent of college students from families with high-incomes attended community college directly from high school. As for the ethnicity, among all college students, while 28 percent of whites initially attended a two-year college, 50 percent of Hispanic and 31 percent of African American students began higher education at community colleges (Community College Research Center, 2014).

Attending a two-year college is associated with fewer financial rewards and decreases the probability of earning a bachelor's degree (Kane & Rouse, 1995; Ganderton & Santos, 1995; Bradburn, Hurst, & Peng, 2001). Yet, regardless of whether students choose a two-year associate degree or a four-year bachelor's degree, they are more likely to have full-time jobs and earn more than those students who do not attend college. The median lifetime earnings of associate degree recipients and bachelor's degree recipients without an advanced degree are, respectively, 27 percent and 65 percent higher than the median earnings of high school graduates (Baum, Ma, & Payea, 2013).

1.2 SIGNIFICANCE OF THE STUDY

Contemporary American society is often referred to as a *knowledge society with* most jobs in the United States more technologically-sophisticated and requiring more knowledge and skills than those provided in high school. According to the Center on Education and the

Workforce (2013), by 2020 65 percent of the job openings will require at least some college-level education. Given this situation, those who continue their education beyond high school will be more likely to be employed in the knowledge society.

Recent research demonstrates the correlation between higher education and rates of employment as well as income. For example, in 2014, the unemployment rate for high school graduates who were not enrolled in college (6 percent) was twice the rate for college graduates (3 percent) (Bureau of Labor Statistics, 2015a). Moreover, the median after-tax annual income for community college graduates ($57,590) and four-year college graduates ($67,140) were higher than those of high school graduates ($35,170) (The Bureau of Labor Statistics, 2015b). Further, college graduates are more likely to have higher job satisfaction, to vote, and to stay out of jail (Burd-Sharps, Elder, Lewis, Martins, 2009); an expanding college-educated labor force has the potential to enhance national economic productivity and retain the nation's competitiveness in global markets (Bell, 2008; Ozsoy, 2008).

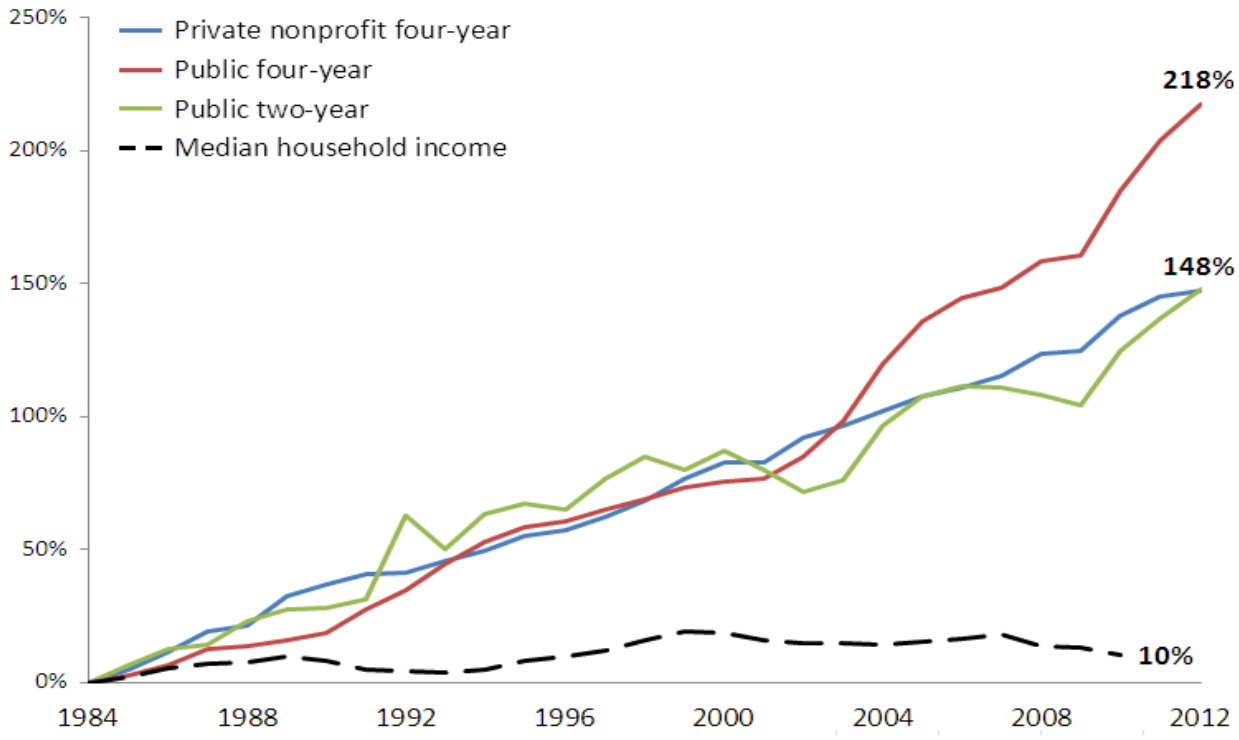
Given the benefits of higher education, many parents want their children to attend college. In 2012, over 90 percent of parents whose children were in grades six through 12 aspired for their children to attend college (National Center for Education Statistics, 2012). In fact, minority students were considerably more likely to believe that a college education is the key to success and to upward economic mobility than white children (College Board/ Next America Poll, 2014).

Though no single factor alone can account for the low rates of college attendance among students from low-income households, the combination of increasing college costs and the lack of financial resources are certainly contributors. According to the Century Foundation (2012), while median family income has grown by 10 percent between 1984 and 2012, public two-year and four-year college tuition and fee rates have increased about 150 percent and 220 percent,

respectively. In other words, household incomes have not kept-pace with college costs (see Figure 1). In 2012-13, tuition and fees in public four-year colleges and universities were 3.57 times as high as they were in 1982-1983, after adjusting for increases in the Consumer Price Index (College Board, 2012). Given this situation, the extent to which families have access to financial resources is significant in determining who attends college (Oliver & Shapiro, 2006, Schreiner & Sherraden, 2007, Sherraden, 1991).

Figure 1

Median Family Income Has Not Kept Pace with College Costs



Source: The century foundation, 2012

According to the U.S. Census Bureau (2014), more than 45.3 million Americans lived in poverty with the official poverty rate being 14.5 percent in 2013. In a racially stratified society, people of color are more likely to be poor. While 22.7 percent of both African Americans and Hispanics lived below the poverty guideline, only 12 percent of non-Hispanic whites were poor

(U.S. Census Bureau, 2012). The median income earned by African Americans and Hispanics was 60 percent ($32,584) and 70 percent ($38,039), respectively, of that earned by the average white household ($51,861) (U.S. Census Bureau, 2012).

Federal financial aid policies and programs, such as need-based grants, federal loans, and work-study are designed to deal with these disparities and increase access to higher education for those who cannot afford it (Heller, 2001). However, existing financial aid is not enough to cover increasing college costs, and need-based financial aid has declined over the years (Sallie Mae, 2013). For example, in 2013, on average, only 30 percent of total college costs came from financial aid (e.g., grants and scholarship). Increasingly, a substantial amount of uncovered college expenses, called *unmet need*, must be paid personally or through family resources (Ficklen & Stone, 2002; Lynch, Engle, & Cruz, 2011). The lack of accumulated assets in families with low-incomes results in higher unmet need because these families do not have the necessary financial resources to meet this need (Oliver & Shapiro, 1995). This, in turn, may prevent students from applying to college or cause them to borrow excessive amounts in student loans to attend a college (ACSFA, 2006). In 2012, the average unmet need of all students was approximately $4,985. However, by family income level, the average unmet need during the 2012-13 academic year for students from low-income households was $6,480, which was nearly three times higher than that of students from high-income households ($1,958) (Institute for Women's Policy Research, 2014). In terms of the unmet need by ethnicity, the amount of unmet need between whites and African Americans was not much different (approximately $5,500 for both groups)[2], but the unmet need weighed heavily on Hispanics ($7,017).

[2] In 2013, on average, African American students received higher amount in grants ($3,513) than their white peers ($2,818) (Sallie Mae, 2013).

During the last decade, the total amount of student loan debt has more than doubled (College Board, 2013). The Urban Institute (2013) reported that recent college graduates owe, on average, nearly $27,000 in student loan debt ($16,651 in 2005), and African Americans (34 percent) and Hispanics (28 percent) are about twice as likely to have student loan debt than are their white counterparts (16 percent).

According to the findings of a recent survey of a nationally representative sample of more than 1,600 parents in the United States, parents recognized the necessity of college savings to cover the unmet costs of college to avoid heavy loan debt (Sallie Mae, 2013). According to Peter Mazareas, Chairman of the College Savings Foundation (CSF), "(a)s a result of the economic crisis of the last several years, American families are aware of the need to save more, minimize debt, and increase their financial literacy" (College Savings Foundation, 2010).

A structured savings program, Child Development Accounts (CDAs), has been proposed as a potentially promising asset-building and financial aid approach. The growing number of empirical studies and several state-level longitudinal social experiment projects have been conducted in order to identify various effects of these savings programs for families with low-incomes (i.e., Saving for Education, Entrepreneurship, and Downpayment, SEED).[3] In addition,

[3] SEED is designed to test the effects of a structured savings program, Child Development Accounts (CDAs) and to provide strategic and practical lessons in how to create an inclusive system of CDAs. "From 2003 through 2008, SEED piloted CDA programs in 12 communities, which included over 1,200 low-income children and their families" (Center for Social Development, SEED National Initiative, 2013; Zager, Kim, Nam, Clancy, & Sherraden, 2010).

as part of the Gaining Early Awareness and Readiness for Undergraduate Program (GEAR UP),[4] a large-scale college savings research project with an initial allocation of 8.7 million dollars was announced in 2012 (U.S. Department of Education, 2012). In short, efforts have been made to clarify the role of college savings in college attendance among students from families with low-incomes. This dissertation study continues these efforts.

1.3 STUDY OBJECTIVES AND RESEARCH OUTLINE

1.3.1 Study Objectives

This dissertation study examines the role of parents' college savings in their children's two-year or four-year college attendance among children from families with low-incomes. In addition to the direct relationship between college savings and college attendance, various mediating mechanisms in the relationship between college savings and college attendance are also explored. Existing studies have pointed out the mediating role of both parents' and children's college expectations on the relationship between savings and college attendance (Cheatham & Elliott, 2013; Elliott & Beverly, 2011a; Song & Elliott, 2012). Some studies have also suggested the influential impact of parent-child discussions on college attendance (Hossler and Gallagher, 1987; Myers & Myers, 2012; Pong et al., 2005). In particular, Pong et al. (2005) argue that parent-child discussions directly linked to *college* may play a crucial role in children's educational outcomes. But until now, no study has examined whether parents' college savings predict parent-child discussions about college, and if these discussions act as a mediator between college savings and college attendance among students from families with low-incomes. Thus, another aim of this dissertation is to test the potential mediating effects of college expectations as

[4] GEAR UP is a federal program aimed at equalizing access to higher education for low-income high school students (U.S. Department of Education, 2012).

well as parent-child discussions about college on the relationship between savings and two-year or four-year college attendance. Further, the association between college discussions and children's college expectations is also examined. This study pays particular attention to students from low-income families whose college attendance rates are disproportionately lower than those of their more affluent counterparts and includes students from all major ethic groups in the analysis.

1.3.2 Study Outline

Chapter One discussed existing financial and educational inequities that accrue to students from minority families with low-incomes and how these inequities impact their college attendance. The importance of higher education and the growing importance of college savings as a strategy to pay for college are also discussed. Chapter Two introduces three theories that form the basis of this study's theoretical conceptual framework: the status attainment model, asset theory, and identity-based motivation theory. This chapter also discusses findings from the existing empirical literature on the association between parents' college savings and college expectations, parent-child discussions about college-going plans, and ultimate college attendance. Research questions and hypotheses are also described in detail. Chapter Three provides an introduction to the data set used in this study, the study sample, key variables and their measures, as well as data analysis. Chapter four presents results of the data analyses. This dissertation closes with a discussion of the findings and limitations of this study as well as implications for social welfare practice and policy deriving from the study results (Chapter Five).

CHAPTER 2.0 THEORETICAL CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

This chapter presents the theoretical framework utilized by this dissertation study and the literature review that supports it. Literature review summary tables are provided in Appendix A. The proposed theoretical framework has been developed by adapting and modifying three different theories: (1) status attainment theory, (2) asset theory, and (3) identity-based motivation theory.

Status attainment theory provides the organizing theoretical framework for this study as it encompasses the most important factors at key moments in the individual's trajectory to educational attainment. Status attainment theory places great emphasis on the influence of household financial resources on educational attainment. Yet, financial resources have been measured largely by household income alone (Nam, Huang, & Sherraden, 2008; Elliott & Sherraden, 2013). Thus, for this dissertation study, I have modified the model by adding one type of household asset—parents' college savings. The next section in this chapter introduces asset theory, which explains various asset effects and the justification for adding the asset variables into the existing status attainment model. In the remainder of this chapter, I discuss identity-based motivation theory. Identity-based motivation theory supports the rationale behind the association between parents' college savings and college expectations as well as the importance of academic engagement and expectations in predicting college attendance.

2.1 WISCONSIN MODEL OF STATUS ATTAINMENT

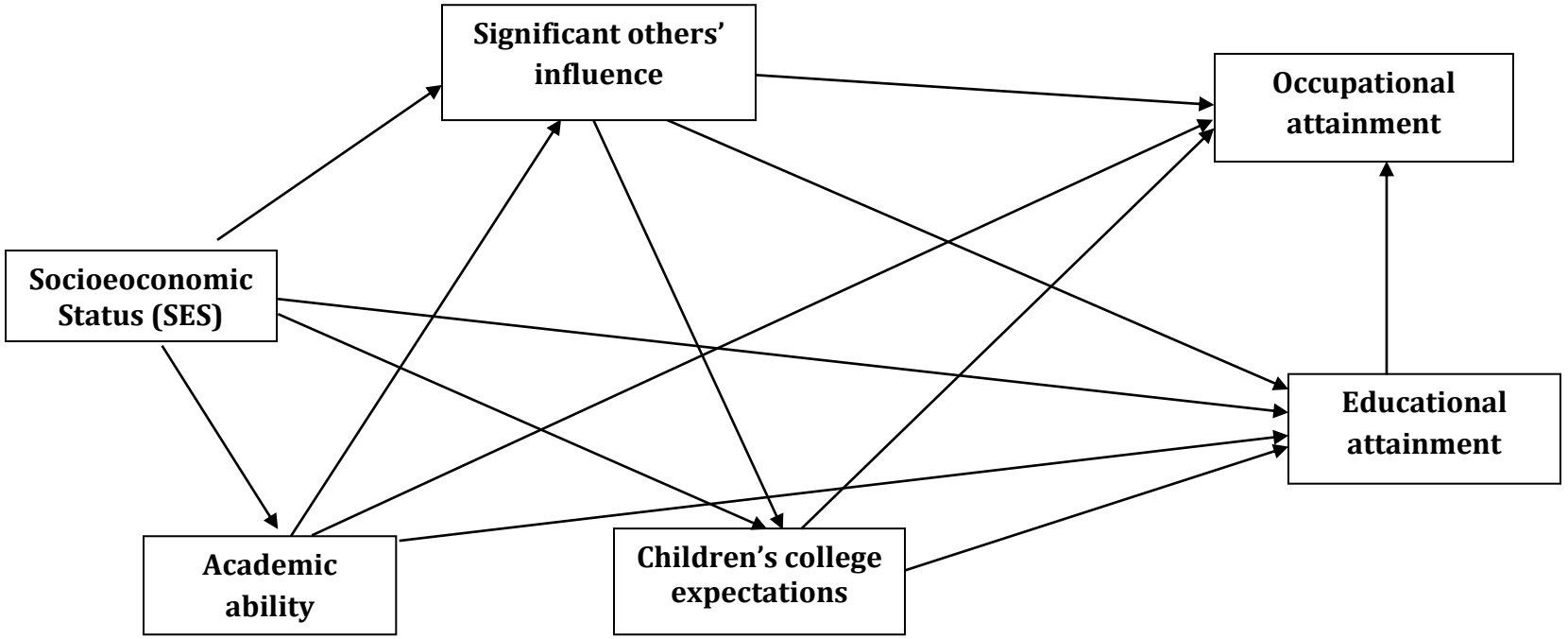
Status attainment theory was developed by Peter Blau and Otis Duncan in 1967 to explain multiple pathways to economic self-sufficiency. The theory assumes social status can be upwardly or downwardly mobile depending upon a combination of family socioeconomic

background factors, such as parents' educational level, occupation, and household income. Status attainment theory suggests children from affluent families are more likely to achieve higher educational attainment due to their parents' higher expectations and greater financial investment in their academic success (Blau & Duncan, 1967). Studies using the status attainment model have demonstrated parents' educational levels affect their own knowledge, values, expectations, and academic involvement, which ultimately affect their children's educational success (Blau & Duncan, 1967). These studies also argue that parents' occupational status impacts the outcome of their children's educational attainment associated, as it is, with monetary rewards and the ability to access information and resources, which eventually affects their children's educational outcomes (Caspi et al., 1998; Burgard & Stewart, 2003).

Later, William H. Sewell, Archibald Haller, and Alejandro Portes (1969) extended the Blau-Duncan basic mobility model and created a more comprehensive model, called the Wisconsin Model, by emphasizing not only socioeconomic structural factors but also psycho-sociological determinants (see Figure 2). The Wisconsin Model largely supplemented its predecessor by illustrating the central role of children's educational expectations and the perceived psychological influence by significant others (Sewell & Hauser, 1980). Significant others are defined as people "who exercise major influence over the attitudes of individuals" (Woelfel & Haller, 1975, p.75) and the original study by Sewell, Haller, and Portes (1969) included information about whether students perceived their parents, teachers, and peers as significant others expecting them to go to college. Since then, studies have demonstrated the crucial role of significant others' educational expectations in improving students' own expectations and educational behavior and attitudes, which in turn affect their educational

Figure 2

Wisconsin Model of Status Attainment Theory (Sewell & Hauser, 1980)



attainment (Sewell & Hauser, 1980; Cheng & Starks, 2002; Wentzel, Battle, Russell, & Looney, 2010).

By emphasizing psychological factors, the Wisconsin Model adds several important assumptions. First, the model posits that educational expectations are one of the most decisive contributors to the achievement of children's long-term educational attainment, predicting college attendance because children are compelled to follow the expectations with which they have been raised, thus motivating their attitudes and subsequent behaviors (Oyserman, Terry, & Bybee, 2002). More recently, using the Wisconsin Model, Morgan (2004) found that expectations have causal effects on academic effort and college attendance.

The second assumption of the Wisconsin Model is that children's college expectations are shaped by their own belief in the possibility of achieving their educational goals (Kahl, 1953, Markus & Nurius, 1986; Oyserman, Terry, & Bybee, 2002). Children's perceptions of possibility may be affected to by their academic ability and performance as well as their own assessment of their families' financial capability to pay for the costs of college (Goldenberg et al., 2001; Jencks, Crouse, & Mueser, 1983; Perna, 2004). In this context, household financial resources, such as income and savings, are important determinants of the student's level of college expectation (Goldenberg et al., 2001; Jacob & Wilder, 2010; Kim, 2012; Zhan & Sherraden, 2011).

According to nationally representative data from the Educational Longitudinal Study (2002), while more than 94 percent of 10^{th} grade children from households with high-incomes expected to graduate from a four-year college or beyond, only 67 percent of children from low-income households shared these same expectations. Kao and Tienda's study (1998; 2005) used in-depth interviews with focus groups composed of Hispanic students from low-income families

to demonstrate that perceived lack of financial resources is the most significant obstacle to the formation of their college expectations. For example, when a moderator asked the students whether they wanted to go college if their parents had no problems paying for it, all of the students showed a strong desire to attend college. Similarly, students from families with low-incomes who expect to receive financial support from their parents are 66 percent more likely than their low-income peers without this support to plan on attending a college (King, 1996; Terenzini, Cabrera, & Bernal, 2001).

The Wisconsin Model also emphasizes the significant influence of parents on a student's educational expectations. By analyzing a large sample of 3,971 boys in public school in Boston area, Joseph A. Kahl's classic study (1953) identified parents' educational expectations as a strong predictor of their children's college expectations, even after controlling for socioeconomic status and academic ability. Since then, many studies have provided evidence of a link between parental expectations and their children's expectations. For example, using statewide Midwestern sample of parents and their adolescent children (N=171), Kirk, Lewis-Moss, Nilsen and Colvin (2011) found that children's college expectations are statistically significantly predicted by parental expectations of their child's educational attainment, and 16 percent of the variance in children's expectations is accounted for by parental expectations. According to Moore, Whitney, and Kinukawa (2009), the impact of parental expectations on their children becomes stronger when parents develop warm and close relationships with their children.

Studies also found that children's expectations are affected by how their parents react to certain situations (Spera, 2005; Roksa & Potter, 2011). That is, parents transmit their expectations to their children through words, attitudes, and behaviors. For instance, parents' verbal and non-verbal encouragement, investment in their children's academic success (e.g.,

buying books and computers), and financial preparations for the cost of college may increase their children's college expectations. Sewell and Hauser's classic research (1976) found that a "youth's perception of parental expectations has a very powerful influence on aspiration" (p.2). The study also demonstrated parents' educational expectations act as a mediator between the family's socioeconomic background and their children's educational expectations. The overall model explained 57 percent of the variation in educational attainment.[5]

In addition to parents' expectations, discussion about college with parents is another influential factor in children's post-secondary expectations as well as real college attendance (Hossler and Gallagher, 1987; Myers & Myers, 2012). Pong et al. (2005) argue that the *content* of communication is more predictive in determining whether or not the discussion will affect children's educational outcomes. In other words, verbal interactions between parents and children by themselves are not enough to affect their children's college attendance. The content of these discussions should be directly related to *college*. College-related conversations with parents may provide children with direct information about college as well as verbal reinforcement of their children's college expectations. Through the conversation, children becomes aware of how their parents are preparing for their higher education, including whether or not parents are setting aside money for their children's post-secondary education. In this context, discussing college is an active form of parents' academic involvement. By analyzing over 4,000 parents and their high school children (NHES:99), Myers and Myers (2012) pointed out that "parent-student discussions about college planning should be seen as a distinct college-

[5] For more detailed discussion of the rationale underlying the development of the Wisconsin Model, the reader is referred to the original research reports (Sewell et al, 1969; Sewell and Hauser, 1972, 1975).

planning activity (p.281)" and this activity has a great deal of influence on college attendance. Perna and Titus (2005) also reported that parent-child discussions about education-related topics significantly increased the likelihood of children attending either a two-year or four-year college, even after controlling for economic, cultural, and human capital. Using data from the National Educational Longitudinal Studies (NELS:88), Sandefur et al. (2006) have consistently found the statistically significant role of parent-child discussions in increasing the likelihood of four-year college attendance versus a two-year college attendance or no college enrollment at all. Finally, the Wisconsin Model suggests that parental college expectations for their children and parents' involvement as measured by discussions about college are also influenced by their socioeconomic status and their perception of their children's academic abilities (Blau & Duncan, 1967; Sewell and Hauser, 1976; Yamamoto & Holloway, 2010).

While status attainment theory explains how socioeconomic status is associated with expectations, parental influences, and college attainment, the following two social theories — asset theory and identity-based motivation theory—provide the rationale behind the effect of parental college savings on college expectations, discussions about college, and college attendance.

2.2 ASSET THEORY

In his influential book, *Assets and the Poor*, Michael Sherraden (1991) highlighted that assets and income are interrelated albeit distinct concepts. That is, *assets*, such as home equity, bonds, and savings, are defined as an accumulated stock of economic resources kept over time, while *income* represents a flow of resources used for daily living expenses. Moreover, assets are a more stable form of economic resource compared with income, which can fluctuate or disappear due to job changes or loss. In fact, the distribution of assets is incredibly skewed

(Mishel, Bernstein, & Allegretto, 2007; Oliver & Shapiro, 2006; Pew Research Center, 2014). While the top ten percent of Americans held 76.7 percent of total U.S. assets, the bottom 40 percent of Americans held less than one percent of all these assets (Pew Research Center, 2014; U.S. Census Bureau, 2012). The recognition in recent years that income and assets are separate concepts, combined with evidence of a highly skewed asset distribution has led to increased interest by researchers and policy makers in examining the effect of assets, apart from income, on educational outcomes.

Asset theory posits various economic, psychological, and social effects of asset-holding on educational outcomes. The proposed effects of parents' college savings on educational expectations as well as college attendance are supported by asset theory. The impact of the holding of assets, which is distinct from the impact of consumption or income, is defined as "asset effects" (Schreiner & Sherraden, 2007; Sherraden, 1991). Assets accumulated over time tend to be available for long-term goals, such as home buying, investment for other asset accumulation, and higher education. Asset ownership has a variety of positive effects that increase the capability to do and to be what people want (Schreiner & Sherraden, 2007). In short, holding assets has been shown to be a positive experience associated with economic, social, and psychological benefits.

In terms of economic effects, accumulated assets provide financial security as well as a platform from which to build wealth, since assets are a more stable form of economic resource than income (Moore et al., 2001; Page-Adams & Vosler, 1996; Scanlon & Page-Adams, 2001; Sherraden, 2005; Shobe & Boyd, 2005). That is why when people face financial crises resulting from job loss, divorce, and/or illness, affluent families with assets are more likely to overcome the difficulties by borrowing against their stored assets than people who rely solely on their

income. According to Sherraden (1991), "(a)ssets cushion income shocks by providing resources to bridge income shortfalls" (p.149). Assets provide financial resources to invest further in accumulated assets, such as savings, stocks, bonds, funds, and housing. Household assets can be more easily transmitted to heirs in a lump sum than income. In addition to the succession of property, parental assets can increase wealth in the next generation through investment in children's human capital, such as attending post-secondary education (Kim & Sherraden, 2011; Sherraden, 1991). More specifically, parents' college savings can be used by their children to buy academic materials (e.g., books, computers, notes, and so on) as well as to finance college. In fact, utilizing the National Educational Longitudinal Survey (NELS) (N=13,699), Charles, Roscigno, and Torres (2007) examined the impact of race-based economic inequality on both two-year and four-year college attendance. Children whose parents have college savings by their eighth grade year were approximately 30 percent more likely to attend a two-year and four-year college. The study found that parents of non-white students are less likely to have college savings and have less money saved for their children when compared with their white counterparts. Findings of the study suggest the likelihood of college attendance gaps among racial groups is significantly explained by parents' college savings. These findings were also supported by Song and Elliott (2012). Using a two-level hierarchical generalized linear model (HGLM), they found the statistically significant role of parents' college savings in improving their children's four-year college attendance (controlling for other possible explanations for college attendance, such as number of siblings, income, parents' education, college expectations, and school type and location). However, Song and Elliott focused on Hispanic students alone. Additional research is required in order to advance a more

comprehensive understanding of the effect of college savings on two-year and four-year college attendance among children from low-income households and across ethnic groups.

Assets also contribute to one's psychological well-being by giving people a sense of confidence to prepare for their future (Sherraden, 1991). In order to explain the psychological effects of holding assets Sherraden (1991) introduced a springs-and-ponds example. Springs and ponds are both crucial water resources for farmers but have distinct functions. Most farmers use water from springs to grow their crops, but build ponds to store water for use in a crisis, such as a drought. Moreover, farmers are able to feel a sense of stability and to make long-term plans by controlling their stored water resources. Similarly, assets provide more opportunities for people to attain their long-term goals and future expectations, which may change how people think and act in the short-run. By emphasizing the role of assets in increasing people's future expectations, as well as the importance of expectations to enhance efforts and achieve future goals, Sherraden (1991) noted that, "without orientation toward the future, hope does not thrive, visions are not created, plans are not made, and struggle and sacrifice are not undertaken" (p.151).

Existing studies also support the effect of assets on college expectations and consequent behaviors. According to Yadama and Sherraden (1996), household assets, savings in particular, enhance people's positive attitudes and behaviors, as measured by prudence, efficacy, and efforts. Shanks and Destin's study (2009) focused on African American families by reporting, "African Americans are more than twice as likely to be *asset-poor*[6] than non-Hispanic whites (p.28)." The study found that accumulated household assets are a statistically significant predictor of

[6] Asset-poverty, a measure developed by Haveman and Wolff (2000), refers to a situation in which a household does not have sufficient financial resources to sustain itself at the poverty line for three months (Shanks & Destin, 2009).

parents' expectations as well as children's college attendance, even after controlling for income. Consistently, studies demonstrate the impact of college savings on parents' college expectations. Using a sample of female-headed households from the National Survey of Families and Households (NSFH), Zhan and Sherraden (2003) found that having college savings has a statistically significant impact on mothers' college expectations, which eventually affect their children's academic outcomes, even after controlling for income. Charles et al., (2007) and Cheatham and Elliott's studies (2012) have consistently found that parents' college savings are significantly associated with parental college expectations, which increase children's college attendance. Zhan and Sherraden (2011) said, "(p)arents with assets may perceive and plan a brighter future for their children; this plan, in turn, may positively affect parenting behaviors, expectations for their children's education, and ultimately may affect their children's educational attainment (p.3)."

As discussed earlier, since children's college expectations are affected by their perceived financial capability to afford the costs of college (Jacob & Wilder, 2010; Jencks, Crouse, & Mueser, 1983; Terenzini et al., 2001), college savings may play a pivotal role in children's expectations for attending college as well. Even though existing studies have not paid particular attention to this among children from low-income households, a few studies suggest support for the psychological effects of college savings. For example, using the white and African American sample from the Panel Study of Income Dynamics (PSID) data, Elliott and Beverly's study (2011a) found the statistically significant role of college savings in children's college expectations. Song and Elliott (2012) have also shown that children whose parents have college savings are almost two times more likely to have expectations to acquire a bachelor's degree than children without college savings. However, again their study restricted their samples to

Hispanic children only. Another study conducted by Elliott et al. (2011) found that children's college expectations act as a partial mediator between college savings and college attendance, after controlling for other socioeconomic and background covariates. Yet, the study sample was also restricted to white and African American children only. Thus, the findings cannot be generalized to the larger population including other ethnic groups.

Finally, asset-holding also has notable social effects. For example, people who own their home (rather than rent) are generally more involved in their communities and have increased social capital in the neighborhood (Lerman & McKernan, 2008). By the same token, studies suggest that parents with more financial resources are more likely to be involved in their children's education. Zhan (2006) and Yeung and Conely (2008) found that parents with more financial assets that are easily converted into cash (e.g., savings, stocks, and mutual funds) are positively associated with the level of parental involvement measured by the amount of time parents participated in their children's school activities and helping children with their homework. Hossler and Gallagher (1987), who developed the three-stage model of college choice, suggested that parent-child discussions about college are a specific type of parental involvement. Perna and Titus (2005) also reported that discussions with their high school children are more effective to increase the likelihood of children attending college when compared with other forms of involvement, such as parent-initiated contact with their child's school. As for the possible relationship between college savings and parent-child discussions about college, only one study conducted by Charles et al. (2007) found that parents who have college savings are more likely to discuss college with their children, after controlling for other background factors. The study used data from the National Educational Longitudinal Survey of 1988 (NELS:88) and did not focus on children from households with low-incomes. No study has

examined whether college savings predict discussions about attending college among students from low-income households, and the potential mediating path these discussions might have in predicting the association between college savings and college attendance.

In summary, asset theory proposes that holding assets (e.g., parents' college savings) enhances college expectations and involvement, thereby motivating children to study harder and seek information about college, which eventually increases the likelihood of children's college attendance. As such it has applicable inclusion in the Wisconsin Model (see Figure 3).

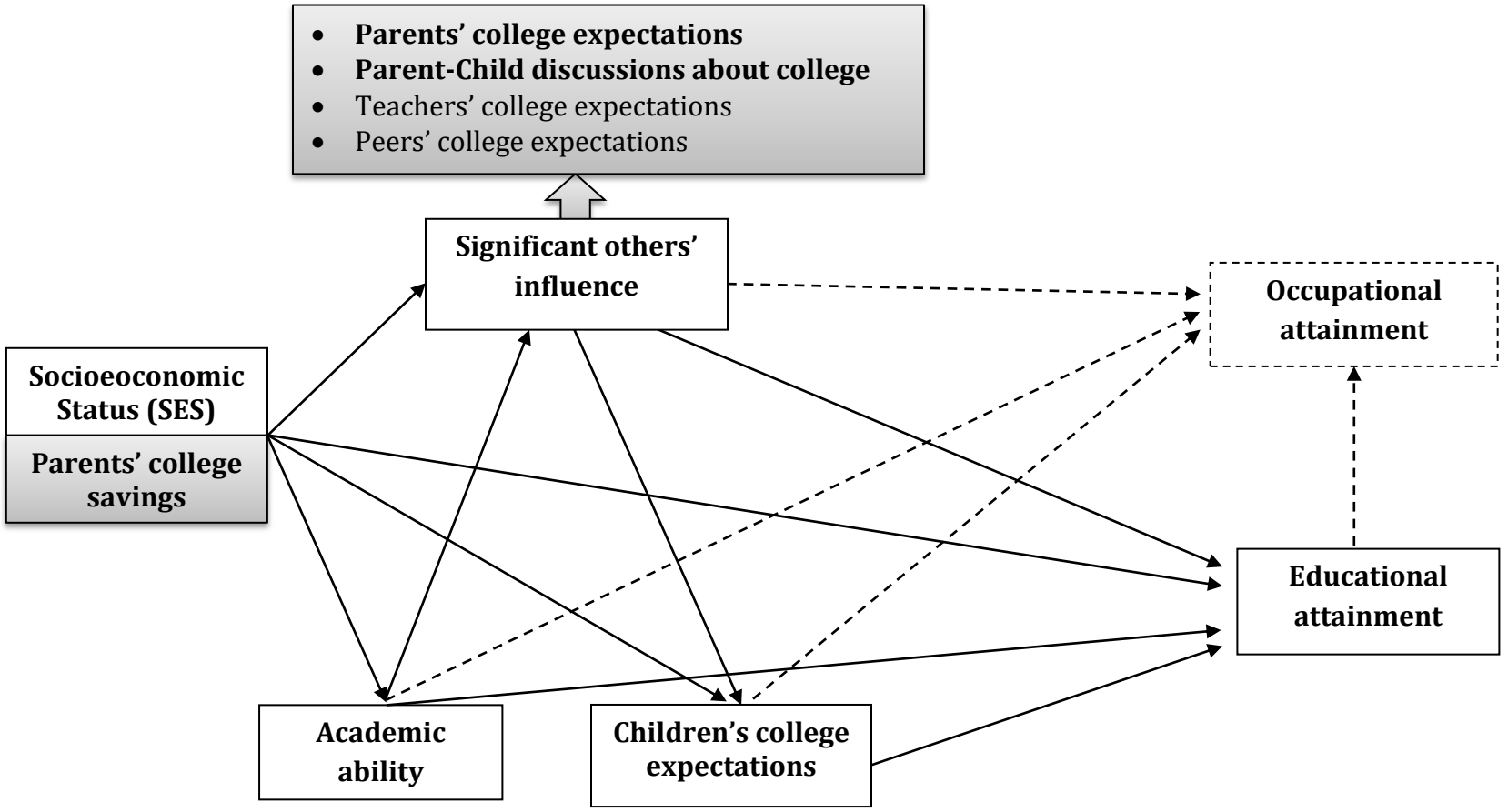
2.3 IDENTITY-BASED MOTIVATION THEORY (IBM)

Identity-based Motivation (IBM) theory posits the significant role of psychological mechanisms in motivating productive behaviors and attitudes, such as learning and diligence, which eventually increase students' chances of reaching their desired goals (Oyserman, 2012). The theory proposes three components to explain individual motivational processes that lead to successful educational attainment: (1) dynamic construction, (2) action and procedural readiness, and (3) interpretation of difficulties. This framework suggests an explanation for how parents' college savings play a significant role in developing a college-bound identity in their children (college expectations) and sustaining disadvantaged students' self-regulatory behaviors.

Dynamic Construction IBM theory assumes individuals dynamically construct multiple self-identities simultaneously in their particular historical, cultural, and socioeconomic context (e.g., "I am Hispanic"; "I am poor"; "I am good at math"; or "I will be a college student") (Erikson, 1968; Oyserman & Destin, 2010). The theory also suggests that among multiple self-identities, which identity is more salient than others is affected by contextual cues. For example, in a racially stratified society, African American and Hispanic students still experience institutionalized discrimination in their schools and society. Many minority students from

Figure 3

Modified Wisconsin Model of Status Attainment Theory[7]



[7] Even though the original status attainment model included both educational and occupational attainment as a proxy for social position, the parts of the model related to education attainment are the focus of discussion.

families with low-incomes are less likely to meet people who have high levels of education and income (Borman & Rachuba, 2001; Ntiri, 2001). Ogbu and Simons (1998) argue that many African American and Hispanic students from households with low-incomes believe that, "individual effort, education, and hard work are important but not enough to overcome racism and discrimination" (p.172). However, this argument neglects to explain within group variations or the success of many low-income minority students (Erickson, 1987; Trueba & Delgado-Gaitan, 1988).

Identity-based Motivation (IBM) theory theorists posit, , even though social contexts of students from families with low-incomes are more likely to prevent them from having a salient college-bound identity, a subtle situational cue is sufficient for those students to develop a mind-set that higher education and their current efforts toward that goal matter for their future. For example, in one experiment, seventh-grade Hispanic and African American students from families with low-incomes were randomly assigned to two groups. One half were presented with a graph of income distributions by educational levels, while the other half were shown a graph of income earned by education-independent careers, such as top musicians, athletes, or actors. The students who received information about income organized by educational levels considered their future as being dependent upon education and were six times more likely to do extra credit homework than students in the other group (Destin & Oyserman, 2010). By simply viewing an income graph of educational levels, students grasped a subtle, yet significant contextual cue. Destin and Oyserman (2009) also found that minority students from low-income households who received need-based financial aid information are more likely to move toward greater academic achievement than students who received information about expensive college costs with no financial aid information. Terenzini, Cabrera, and Bernal (2001) found that economically

disadvantaged students who anticipate financial support showed higher intention to apply to college. These studies suggest the importance of an open path to college, which enhances immediate academic motivation and effort.

Considering the association between perceived financial capability to afford the costs of college and children's college expectations, children from families with high-incomes rarely doubt their parents' financial ability to pay for their college costs regardless of their awareness of the existing college savings for their future education. In contrast, for many students from families with low-incomes who consider the path to college closed due to high college costs (Tienda, 2009), parental college savings by itself may play a positive role, giving them hope to have a way to finance their future education and consider the path to college is not closed. For these students, the awareness their parents set aside money for their future education can be perceived as their parents' having high expectations for them. Terenzini, Cabrera, and Bernal (2001) noted, "(s)aving for college is presumed to be an objective and key expression of parental encouragement to pursue a college degree (p.8)." That is, parents' college savings may have a larger influence on low-income children's college expectations. In a social experiment SEED OK, students from families with low-incomes in Oklahoma who had college savings with an initial $1,000 deposit and matching of savings were found to have higher future educational expectations and school engagement when compared with their peers who had no college savings (Sherraden & Clancy, 2008; Sherraden, 2009).

Action and Procedural Readiness Creating a college-bound identity (an expectation of attending college) is necessary, but not enough to ensure students' successful college attendance. Expectations should be linked to a student's current behaviors and effort (e.g., doing homework, engaging in school activities, asking questions, and seeking college information). For example,

studies have shown that spending time completing homework is positively associated with college attendance (Chales et al., 2007; Oyserman & Destin, 2010). Also, students with college expectations may try to obtain relevant college information. These self-regulatory behaviors also need to be sustained over time. IBM theory proposes that when future goals feel congruent with other important aspects of social identity, students are more likely to engage in multiple strategies, which eventually helps them sustain their behaviors and effort. For example, for students from high-income households, success strategies may be cued through their parents' high levels of education, prestigious jobs, high expectations, and active involvement in child's education and college-going plans (Oyserman, Bybee, & Terry, 2006). In contrast, parents from low-income households are less likely to cue strategies for creating a college-bound identity because of their own lack of experience with higher education. They are also less likely to have financial resources or information related to higher education to provide their children (Oyserman & Fryberg, 2006; Sallie Mae Fund, 2003). However, by linking the low-income students' college-bound identity to a specific strategy, students are able to sustain on-going engagement in school in order to achieve their educational goals (Oyserman & Fryberg, 2006). Empirical studies have found that once students successfully form a strategy-linked college-bound identity, they are less likely to get involved in delinquent activities and are more likely to achieve better educational outcomes (Oyserman, Bybee, & Terry, 2006; Destin & Oyserman, 2009). Following this line of reasoning, college savings and discussions about eventually attending college may serve as a good strategy for students from low-income households.

Interpretation of Difficulty The journey toward achieving a long-term goal, in this case attending college, is not always smooth. In particular, students from families with low-incomes may face many more challenges when compared with their more affluent counterparts. For

instance, financial costs, lack of information about college, or low test scores may act as obstacles (ACSFA, 2010). Given this, ways to interpret challenges to college enrollment are another key factor in sustaining effort in order to reach educational goals. IBM theory suggests students who successfully develop expectations they will attend college and have tangible strategies to address obstacles, such as college savings and information about financial aid, tend to interpret inevitable hurdles as part of a meaningful process rather than as a series of insurmountable obstacles. Also, those children believe that being a college student is not easy but important and possible (Oyserman, Bybee, and Terry, 2006; Oyserman, 2012).

In summary, IBM theory suggests a distinct path toward college attendance. First, attending college needs to be considered a realistic possibility to a student. Then, to sustain college expectations, the college-bound identity must be linked to detailed strategies related to attending college (Oyserman, 2010; Oyserman, 2012). Once the college-bound identity is congruent with other important aspects of their identities, students are more likely to develop strategies for successfully traversing the road to college through receiving positive contextual cues from their immediate environment and significant others, such as parents. Also, if their college-bound identity is reinforced through contextual cues and strategies, students tend to interpret inevitable difficulties as mere bumps in the road to progress (Oyserman, Bybee, and Terry, 2006; Oyserman, 2012). Until today, relatively little work has been done to examine whether parents' college savings, as part of children's immediate environment or context, serve as a positive cue or a strategy to sustain low-income students' college expectations and their subsequent college attendance.

2.4 OTHER INFLUENTIAL PREDICTORS OF COLLEGE ATTENDANCE

This dissertation study also includes a variety of variables from previous studies thought to be significant determinants of college attendance. These factors include students' gender, ethnicity, number of siblings, academic achievement, parents' educational levels, a favorite teacher's and a friend's college expectations, hours spent on homework, participating in college preparation programs, and meetings with school counselors for college information.

Gender is an important individual characteristic likely to have an impact on college attendance. According to recent national data from the U.S. Census Bureau and Current Population Survey of 2012, females are now more likely to enroll in higher education than male students. This gender gap has widened in recent years with the phenomenon being found across all ethnic groups.

This dissertation study includes all major racial/ethnic groups as defined by the U.S. Census Bureau (e.g., white, African American, Asian, and Hispanic). Even though the race/ethnicity gap in higher education has narrowed in recent years, African American and Hispanic students from low-income households are still lagging behind their white and Asian counterparts in college attainment (Institute for Higher Education Policy, 2010; Pew Research Center, 2013). Students from underrepresented ethnic groups are also more likely to begin at community colleges compared to white students (Community College Research Center, 2014). Jenkins and Fink (2016) reported that even though 80 percent of community college students wanted to earn a bachelor's degree, only 14 percent of them transferred to a four-year college and earned a bachelor's degree within four years of transferring. Thus, ethnicity should be taken into account to predict two-year or four-year college attendance.

The quantity-quality trade-off model (Becker & Lewis, 1973) suggests more resources can be allocated to each child when families have fewer numbers of children. Given this logic, the existing literature found having many siblings has a negative impact on college attendance because of the pressure of competing with siblings for financial resources and parental attention (Hernandez, 2004; Song & Elliott, 2012). Workman (2014) also found that number of siblings in a student's family has a negative effect on attending any college as well as attending a four-year as opposed to two-year college. Sibling size was negatively associated with the likelihood of receiving financial support from family. The same study also found that the greater academic achievement of students with a lower number of siblings accounted for the negative effect of sibling size on four-year college attendance.

Academic ability is another predictor of educational expectations and educational attainment. A classic study by Sewell and Hauser (1976) demonstrated that "measured [academic] ability has direct influences on educational achievement and indirect influence that are mediated by aspirations" (p.2). Also, low academic achievement is a key causal factor that prevents many low-income and minority students from attaining their desired education goals. According to a recent report by the U.S. Department of Education (2013), the average standardized mathematic score of 12th grade white students was 30-points and 21-points higher than the scores for African American and Hispanic students in 2013. In addition, score gaps in reading have persisted between white students and minority students since 1990. In 2013, the average reading score for 12th grade white students was 29-points higher than the scores for their African American counterparts and 21-points higher than the scores for Hispanic students. Even though math and reading scores are not representative of the student's overall academic achievement, the scores are generally used to determine their academic readiness for college.

Moreover, according to Reardon (2011), the academic achievement gap between children from high-income and low-income families (income achievement gap) is larger than the black and white achievement gap. Reardon (2011) reports an average standardized test score for students from high-income families was 40-points higher than the score for students from families with low-incomes.[8] Different investment patterns (e.g., high-income parents spend more time and resources for their children's education), parental educational levels, social resources, and school quality were indicated as major contributors to the income achievement gap (Reardon, 2011).

Studies also suggest children whose parents have a higher level of education tend to achieve better academic outcomes due to their parents' higher expectations and greater support for their children's educational attainment (Davis-Keane, 2005; Entwisle et al., 2005; Hill & Duncan, 1987; McLanahan, 2004; Mayer, 1997; Wildhagen, 2009). That is, the parents' level of education affects their child's knowledge, values, educational expectations, and academic involvement, which eventually lead to their children's educational success. Furthermore, parents who have attained a higher level of education tend to earn relatively higher wages and are more likely to invest financial resources in their children's education.

As discussed previously, the original Wisconsin Model assumes the impact of teachers' and peers' expectations on the formation of college expectations (Woelfel & Haller, 1971). Through daily interaction with school teachers and peers, students appear to internalize the educational aspirations these significant others' have for them (Entwisle et al., 1988; Woelfel & Haller, 1971). Using the National Education Longitudinal Study (NELS:88) data, Cheng and Stark (2002) found statistically significant associations between teachers and friends' college-

[7] The low-income and high-income are defined as a family at the 90th percentile of the family income and a family at the 10th percentile (Reardon, 2011).

attendance expectations for the student as well as for the student's own college expectations. These results were consistent across ethnic groups.

The amount of time a high school student spends each week on homework has been used as a proxy for student effort. A statistically significant and positive relationship between this homework has been found with academic achievement as well as college attendance (Cooper et al., 2006; Charles et al., 2007; Natriello & McDill, 1986; Oyserman & Destin, 2010; PISA, 2001; Rosenbaum, 2004).

Hoxby and Avery (2012) identified lack of information about college within low-income households as a key obstacle in applying to and accessing higher education. Attending college preparation programs is one way to gather the relevant information about college and support one another to achieve the common goal, college attendance (Center for Higher Education Policy Analysis, 2012). School counselors are another significant resource for obtaining this information. More specifically, existing studies have found that school counselors play a pivotal role in the college application process by impacting students' expectations about, motivation for, information about college, and financial aid (Bryan, et al., 2011; Elliott & Song, under review; McDonough, 1997, 2005; Perna & Titus, 2005; Plank & Jordan, 2001). Since low-income families often lack critical information about college, poor students and parents benefited the most from contacting school counselors about college-related information (Kim & Schneider, 2005).

2.5 SUMMARY

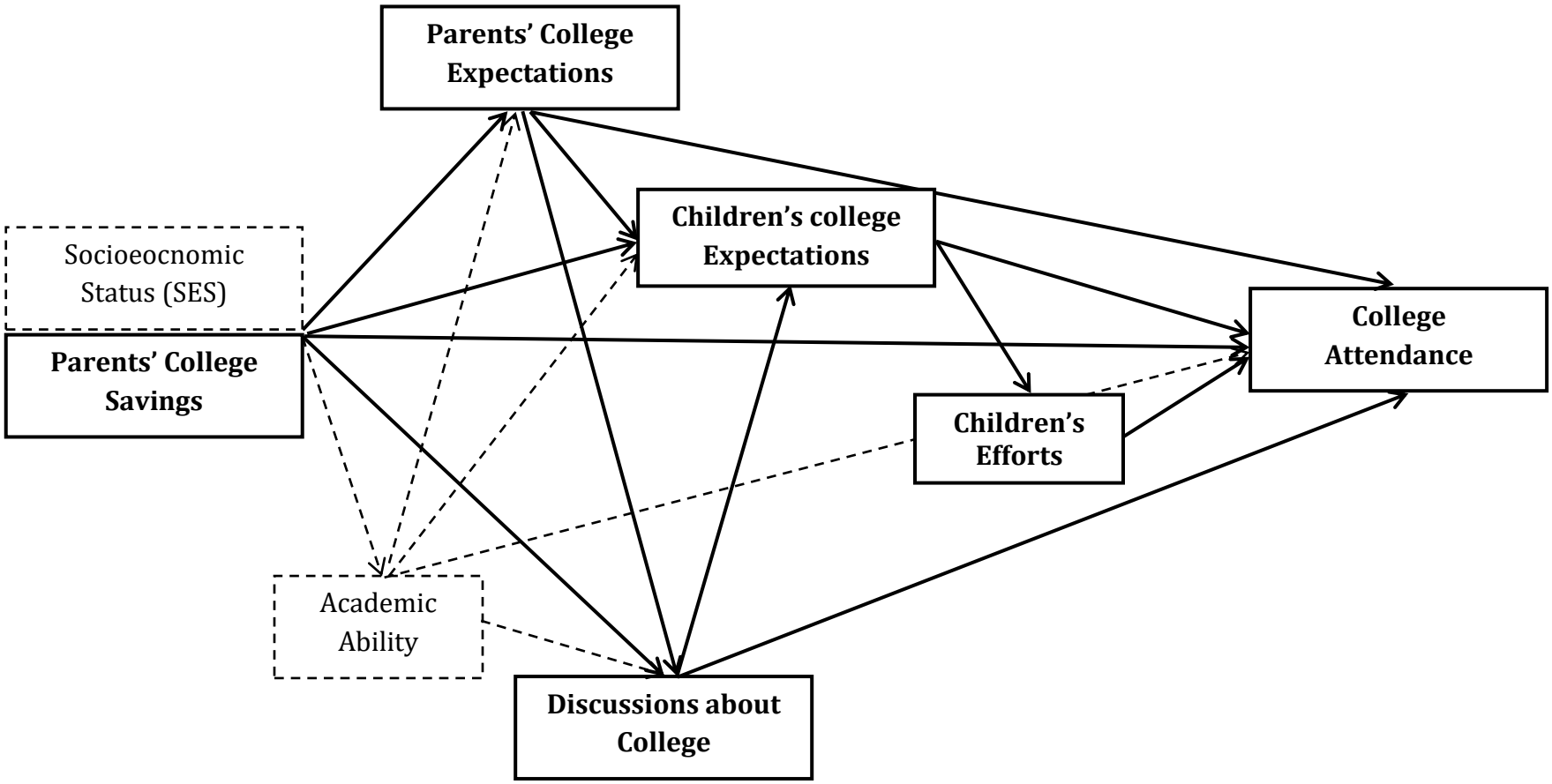
The existing literature consistently suggests statistically significant direct and indirect effects of parents' college savings on their children's college attendance. However, none pay attention to the direct and indirect contribution of parents' college savings on college attendance

among students from families with low-incomes nor do they examine the possible mediating effect of discussions about attending college on the pursuit of higher education. Most of the previous studies of college savings have focused exclusively on a single population, such as African Americans alone and/or white or Hispanics alone. Thus, this dissertation is designed to predict the associations between college savings and college attendance for students from low-income families among a comparison of all ethnic groups.

This study is designed to fill a gap existing in the literature to date that informs asset-building approaches as a way to help students from households with low-incomes. The conceptual model of this dissertation (see Figure 4) derives from a combination of status attainment theory, asset theory, and identity-based motivation (IBM) theory. More specifically, I have modified the Wisconsin Model by adding parents' college savings as a potential key predictor of college attendance. In terms of the influence of significant others, this study pays special attention to parent-child discussions as a form of parental involvement in college planning along with parental college expectations. By adding discussions about going-to-college into the model, this dissertation also tests the association between discussions and children's college expectations. Lastly, based on the IBM theory, children's efforts to pursue higher education (e.g., doing homework and seeking college information) are also added as a predictor of college attendance.

Figure 4

Song Conceptual Model: A Model of Parental College Savings' Direct and Indirect Effects on College Attendance



2.6 RESEARCH QUESTIONS AND HYPOTHESES

This dissertation tests whether there is a statistically significant and positive association between parents' college savings and attending two-year or four-year college for students from families with low-incomes, after controlling for other influential factors. Then, the mediating pathways of the effect of college savings on college attendance via college expectations and discussions about college are examined. In addition, this dissertation pays special attention to the role of parent-child discussions about going to college to predict children's college expectations as well as real college attendance.

This dissertation contributes to the literature by addressing four existing gaps. First, among various types of household assets, I focus on parents' general college savings as a potential predictor of their children's college attendance. Second, this study includes all major ethnic groups included in the U.S. Census (2010): white, African American, Hispanic, Asian, and others.[9] Third, this dissertation examines the effect of college savings on college attendance among households with "low-incomes" defined as households with incomes at or below the 185 percent of federal poverty guidelines for 2002. That is, students who are eligible for free or reduced price lunch programs are the sample population. Finally, this study investigates several indirect mechanisms between parental college savings and their children's college attendance (e.g., discussion about college, parental college expectations, and children's college expectations). Specifically, the current literature does not include research testing the mediating role of parent-child discussions about college in predicting the relationship between parental college savings and children's college attendance as well as the effect of college discussions on enhancing children's college expectations.

[9] Hispanics and Asians are still understudied populations within asset research.

The aforementioned purpose of the study leads to the following research questions:

Research Question 1: Are parents' college savings associated with two-year or four-year college attendance among children from families with low-incomes, after controlling for other covariates?

- Hypothesis 1-1. Parents' college savings have a positive and direct association with children's two-year or four-year college attendance, even after controlling for other covariate factors.
- Hypothesis 1-2: Parents' college savings have an indirect association with children's two-year or four-year college attendance through college expectations and parent-child discussions about college, after controlling for other covariate factors.

Research Question 2: Are discussions with parents about going-to-college associated with children's college expectations, after controlling for other covariates?

- Hypothesis 2-1. Children who discuss attending college with their parents are more likely to have higher college expectations to attend two-year or four-year college than children who have never discussed these topics with their parents.

CHAPTER 3.0 METHOD

3.1 DATA

The Education Longitudinal Study of 2002 (ELS: 2002) funded by the United States Department of Education was designed to analyze a national sample of students' transitions from high school into higher education or the workforce. A national sample of high schools was first selected using stratified probability proportional to size (PPS). Of the 1,221 eligible high schools, 752 schools (62%) participated in the study and 26 (twenty six) 10th graders were randomly selected from each school. In 2002, 15,362 10th grade students participated in a baseline survey. This survey included questions about the students' demographic characteristics, academic achievement, and college expectations. Two years later, in 2004, the first follow-up survey was conducted with a response rate of 89 percent. An additional follow-up survey in 2006 was conducted (almost two years after most sample members had graduated from high school), including questions about post-secondary educational access and choice, or transition to the labor market. 14,200 students participated in the second follow-up, for a response rate of 88 percent (National Center for Education Statistics, 2007). Surveying the same individuals over time made it possible to examine how the student's earlier achievements, expectations, and experiences influenced later educational outcomes. The ELS: 2002 is also a multi-level study. Information was collected not just from students, but also from their parents and teachers, librarians, and school administrators. More specifically, 13,488 parents, 7,135 teachers, 743 principals, and 718 librarians completed a base-year questionnaire in 2002. This multi-level focus supplies researchers with a comprehensive picture of the home, school, and community environments and the impact these have on the student. This dissertation study used data collected from both

students and parents in 2002 as well as data collected from students in two follow-up surveys in 2004 and in 2006.

3.2 SAMPLE

This dissertation pays particular attention to students from families with low-incomes. "Low-income" is defined in this study as students who qualify for free or reduced price lunch under the National School Lunch Program in 2002. Families with incomes at or below 185 percent of federal poverty guideline were eligible for the lunch program. The student sample includes members of the second year of high school cohort (10^{th} graders) in 2002. Also, students who completed the first follow-up interview in 2004 and second follow-up interview in 2006 are included. That is, this study sample was initially limited to students who participated in all three surveys. Second, the sample was also restricted to students who participated in formal educational systems, thus home-schooled children are excluded. Third, a parental survey that included several key variables of interest (e.g., college savings, parental expectations, and levels of educations) was conducted during the baseline survey in 2002. Thus, students whose parents did not respond to this survey were excluded. After the three restrictions were applied, the total number of sample students was 3,997. To make generalizations about the national populations represented by ELS: 2002 data, the data have been weighted by "the base-year and second follow-up panel weight" developed by the data distributors. After applying the panel weight to the entire samples, low-income samples were selected (weighted N= 979,674).

3.3 MEASUREMENT OF VARIABLES

In this section, variables of interest and demographic background variables are described. The variables and measurements are summarized in Table 1.

3.3.1 Independent Variables

The main independent variable is parents' college savings for their children's higher education. The independent variable was measured in 2002 when children were in 10th grade. This variable is drawn from questions asking parents how they were preparing financially for their child to attend college. Parents who did not have college savings were coded as 0 (no college savings), while parents who had general savings accounts for their children's higher education were coded as 1.

3.3.2 Mediator/ Dependent Variables

College attendance A primary dependent variable is college attendance. This variable is drawn from the highest level of education students attempted as measured in 2006. Education levels were originally categorized as follows: (1) some high school, (2) GED recipient, (3) high school diploma recipient, (4) less than two-year school, (5) two-year community college enrollment, and (6) four-year college or university enrollment. By collapsing the aforementioned questions, students with no college (response options 1, 2, 3 & 4) were coded as 0, students who attended a two-year college (response option 5) were coded as 1, and students who attended a four-year college (response option 6) were coded as 2. "No college" serves as the reference group.

Discussions about college Students were asked in 2004 how often they discussed college attendance with their parents. Students who never discussed attending college with their parents were coded as 0, and students who had ever discussed college with their parents were coded as 1.

Parents' college expectations In 2002, parents were asked how far in school they expected their child would go. There were seven response options: (1) Less than high school graduation; (2) High school graduation or GED only; (3) Attend or complete a two-year school

course in a community college or vocational school; (4) Attend college, but not complete a four-year degree; (5) Graduate from college; (6) Obtain a master's degree or equivalent; and (7) Obtain a Ph.D., M.D., or other graduate degree. Parents who expected their children to attend less than any college (response options 1 & 2) were coded as 0, parents who expected their children to attend a two-year college (response options 3) were coded as 1, and parents who expected their children to attend a four-year college or more (response options 4, 5, 6 & 7) were coded as 2. "No college" serves as the reference group.

Children's college expectations Students were asked in 2004 when they were in 12th grade, "As things stand now, how far in school do you think you will get?" Again there were seven response options: (1) Less than high school graduation; (2) High school graduation or GED only; (3) Attend or complete a two-year school course in a community college or vocational school; (4) Attend college, but not complete a four- year degree; (5) Graduate from college; (6) Obtain a master's degree or equivalent; and (7) Obtain a Ph.D., M.D., or other advanced degree. Students whose expectations were that they would complete less than college (response options 1 & 2) were coded as 0, students who expected to attend a two-year college (response options 3) were coded as 1, and students who expected to attend a four-year college or more (response options 4, 5, 6 & 7) were coded as 2. "No college" serves as the reference group.

Teacher's college expectations In 2004, students were asked about the perception of their favorite teacher's educational aspirations for them after high school. Teachers responses included: (1) Go to college; (2) Get a full-time job; (3) Enter trade school or apprenticeship; (4) Enter military service; (5) Get married; (6) They think I should do what I want; and (7) They don't care. The answers were recoded dichotomously: "No college attendance" and/or "other"

(response options 2 through 7)" were coded as 0, and "going to college (response options 1)" was coded as 1.

Friend's college expectations In 2004, students were asked about the perception of their closest friend's educational aspirations for them after high school. Friend's responses included: (1) Go to college; (2) Get a full-time job; (3) Enter trade school or apprenticeship; (4) Enter military service; (5) Get married; and (6) They think I should do what I want. "No college attendance" and/or "others" (response options 2 through 6)" was coded as 0, and "going to college (response options 1)" was coded as 1.

Spending time to complete homework The variable measuring the amount of time the student spent on homework each week was originally coded (2004): (0) None, (1) Less than 1 hour each week, (2) 1 to 3 hours, (3) 4 to 6 hours, (4) 7 to 9 hours, (5) 10 to 12 hours, (6) 13 to 15 hours, (7) 16 to 20 hours, and (8) over 20 hours each week. According to the National Center for Education Statistics (2011), the average number of hours high school student spent on homework per week was approximately six hours. Given this, in this dissertation study, students who spent less than one hour on homework per week (response options 0 & 1) are coded as 0; students who spent between one to six hours on homework per week (response options 2 & 3) are recoded as 1; and students who spent over six hours on homework per week (response options 4 through 8) are recoded as 2. The group who spent less than one hour on homework per week serves as the reference group.

College counseling The variable measuring the student's contact with school counselors for college information is a dichotomous variable measured in 2004. Students who had never met with a high school counselor were coded as 0, while students who had met with a school counselor to get information were coded as 1.

Academic achievement Students' academic achievement was measured by standardized reading and math scores during the baseline survey in 2002. Math and reading test questions for ELS: 2002 were selected from large-scale national and international assessments, such as National Assessment of Educational Progress (NAEP) and Program for International Student Assessment (PISA). Math tests contained items in arithmetic, algebra, geometry, probability, and advanced topics. Reading tests consisted of several reading passages, followed by three to six questions based on each passage, and the passages included literary materials and topics in the natural and social sciences (National Center for Education Statistics, 2004). The standardized test scores were rescaled to a mean of 50 and standard deviation of 10, and ranged from 10 to 90 point scale with higher scores reflecting better academic achievement. That is, the scores provide an individual student's achievement level relative to the population as a whole.

3.3.3 Demographic Variables

This dissertation includes several covariates based on existing empirical evidence suggesting influential factors affecting college expectations, discussions about college, and college attendance (e.g., gender, ethnicity, parents' educational level, and number of siblings).

Gender Students were asked to self-report their gender in 2002. Male and female were coded as 0 and 1, respectively (0= male; 1= female).

Ethnicity This ethnicity variable includes seven categories in the ELS:2002: (1) American Indian or Alaska Native; (2) Asian or Pacific Islander, including Native Hawaiian; (3) African American; (4) Hispanic, no race specified; (5) Hispanic, race specified; (6) Others; and (7) white. For clarity of presentation, categories 4 and 5 are combined into Hispanic. Due to the small sample size, categories 1 and 6 are combined as "others". The original categories were recoded

for this dissertation as, (0) white, (1) African American, (2) Hispanic, (3) Asian, and (4) others. White serves as the reference group.

Number of siblings The number of siblings in each tenth grader's family was measured in 2002. Survey results show that it is a continuous variable ranging from 0 to 7.

Parents' education levels Parents' education is equivalent to either mother's highest level of education or father's highest level of education, whichever is the higher level of completed education. Parents' education level is composed of eight distinct levels of education: (1) Did not finish high school; (2) Graduated from high school or obtained a GED; (3) Attended two-year school, no degree; (4) Graduated from two-year school; (5) Attended four-year college, no degree; (6) Graduated from college; (7) Completed master's degree or equivalent; and (8) Completed Ph.D., M.D., or other advanced degree. For the purposes of this study, the eight levels were collapsed into three: parents without college experience (response options 1& 2) were coded as 0, parents who had attended a two-year college (response options 3 & 4) were coded as 1, and parents who attended four-year college or higher (response options 5 through 8) were coded as 2. Parents without college experience serve as the reference.

Household income Income eligibility guidelines for free or reduced-price lunch were used to define low-income in this study. According to U.S. Department of Agriculture (USDA), children from families with incomes below 130 percent of the federal poverty lines (FPL) are eligible for free lunch, and children with incomes between 130 percent and 185 percent of the FPL are eligible for reduced-price meals. Hence, for the purposes of this study, the sample was restricted to families with incomes at or below 185 percent.

In the ELS:2002, parents were queried about their total annual income from all sources in the previous year. This income variable was roughly reported with 13 distinct levels: (1) None;

(2) $1,000 or less; (3) $1,001–$5,000; (4) $5,001–$10,000; (5) $10,001–$15,000; (6) $15,001–$20,000; (7) $20,001–$25,000; (8) $25,001–$35,000; (9) $35,001–$50,000; (10) $50,001–$75,000; (11) $75,001–$100,000; (12) $100,001–$200,000; and (13) $200,001 or more.

Because this income variable was collected in 2002, the income eligibility guidelines of 2001 were utilized to define the children from low-income families. The income guidelines vary by family size. I calculated the number of children and adults in each household using two variables (parent composition and number of dependents from parent survey), and then adjusted reported annual income for family size (as also done by Oseguera, 2012). For example, in 2001, annual income of $32,653 was 185 percent of the FPL for a family of four. Thus, the reported income categories 1 to 8 are defined as low-income for a family of four in this study. [10]

Table 1

Variables Included in the Analysis Models and Its Measures

Variable name	**Label**	**Measures**
College attendance	Whether children attend two-year college or four-year college (2006)	0= no college 1= attend 2-year college 2= attend 4-year college or higher
Parental college savings	Whether parents have a savings account for their children's higher education (2002)	0= no college savings; 1= having college savings
Parents' college expectations	How far in school parents want their tenth grader to go (2002)	0= no college; 1= expectation for 2-year college; 2= expectation for 4-year college or beyond

[10] The definition of low-income is not precisely accurate because the survey methodology offered ranges of income rather than collecting actual income amounts.

Children's college expectations	How far in school students think they will get (2004)	0= no college; 1= expectation for 2-year college; 2= expectation for 4-year college or beyond
Discussions about college-going	Whether children ever discussed about college-going issues with their parents (2004)	0= never; 1= ever discussed
Homework time	Time spent to complete their homework each week in and out of school (2004);	0= None (reference); 1= less than 1 hour each week; 2= 1 to 3 hours; 3= 4 to 6 hours; 4= 7 to 9 hours; 5= 10 to 12 hours; 6= 13 to 15 hours, 8= 16 to 20 hours, and 9= over 20 hours
College counseling	Contact with school counselors for college information is a dichotomous variable (2004)	0= students who never met with school counselors; 1= students who had met counselor to receive college information
College preparation programs	Ever in program to help prepare for college (2002)	0= No; 1= Yes
Academic achievement	Standardized math scores (2002); Standardized reading scores (2002)	Continuous variable
Teacher's college expectations	Children's perception of their favorite teacher's educational aspirations for them (2004)	0= other than college attendance 1= attend college after high school
Friend's college expectations	Children's perception of their closest friend's educational aspirations for them (2004)	0= other than college attendance 1= attend college after high school
Gender	Respondent's gender (2002)	0= male; 1=female
Race/Ethnicity	Respondent's racial/ethnic status (2002)	0= white; 1= African American, 2= Hispanic 3= Asian; 4= Others

Number of siblings	The number of siblings tenth graders have (2002)	Continuous variable
Parents' educational level	Parents' education is equivalent to either mother's highest level of education or father's highest level of education.	0= No college 1= attend 2-year college 2= attend 4-year college or higher

3.4 DATA ANALYSIS

This section provides a detailed description of the analyses used to test the aforementioned research questions. After checking basic statistical conditions, such as outliers and missing data, univariate (descriptive) analyses were performed. Univariate analysis aims to gain an improved understanding of study samples. Depending on the types of variables, a distribution of each variable was reported. The next step in the analysis was to conduct bivariate correlations (Pearson correlation, r) to detect possible collinearity. However, it should be noted that the bivariate analyses do not aim to determine independent variables that will be included in the final analytic models. In other words, since all independent variables in this study were derived from theory or existing empirical studies, simply excluding variables found not to be related to key variables from the final model is not a desirable approach (Kim, 2006; McClave et al., 2004). As for the multivariate analysis, since all outcome and mediator variables in this study are categorical, multivariate logistic regressions are utilized. The logistic regressions help identify which independent variable is influential in predicting the likelihood of an outcome variable occurring (e.g., attending a college), when all other predictors are held constant. Finally, two different types of mediating test techniques were used: (1) the Baron and Kenny method and (2) Multiple mediation bootstrapping. As a causal steps approach, the Baron and Kenny method is based on four steps of regressions. Unlike the Baron and Kenny approach, bootstrapping does

not impose the assumption of normality of the sampling distribution, and enables a simultaneous testing of multiple mediating effects (Preacher & Hayes, 2008).

3.4.1 Missing Data

Missing data is a common problem in longitudinal data analysis, resulting in limitations regarding generalization of the findings as well as reduced power (Rubin, 1987). The existence of missing data may make the sample biased and threaten valid inferences regarding a population from which the sample was drawn. To treat missing data appropriately, defining patterns of missing data are required (Little & Rubin, 1987). Little and Rubin (1987) suggest three types of missing data mechanisms: (1) Missing completely at random (MCAR), (2) Missing at random (MAR), and (3) Not missing at random (NMAR). When missing data are randomly distributed across all observations, this pattern is considered as MCAR. In this case, results of independent t-test or chi-square of each key variable between data with and without missing values do not have statistically significant differences. If observations between complete data and missing data differ significantly (e.g., mean difference on academic test scores between complete data and missing data), the missing patterns could be considered either MAR or NMAR.[11]

If the pattern of missing data can be explained only by the very closely related variable, NMAR data is assumed. In this dissertation study, the non-responding (missing) group of parental college savings was found to exist among parents with no expectations for their children to attend college. That is, the missing pattern of parental college savings can be considered as

[11] If a key variable is continuous, the Little's MCAR test can be employed. The null hypothesis of the Little test is no significant mean difference between complete data and incomplete data (MCAR). If the p-value is less than .05, the data may be missing at random (MAR) or not missing at random (NMAR).

NMAR. In this case, the deductive imputation approach (also called imputation based on logical rules) is preferred (National Center for Education Statistics, 2011). This approach deduces missing values from closely related information (having deterministic relationship) in the same survey.[12] For example, parents with low-incomes who do not expect their children to attend college may not open savings accounts for children's post-secondary education. In addition, prior to asking whether parents opened savings accounts for college, the following question was asked: "Have you or your spouse/partner done anything specific in order to have some money for your tenth grader's education after high school?" Some parents with no expectations their children will attend college chose not to answer this question. In short, parents who had no expectations their child would attend college and rejected answering this question about savings efforts did not respond to the college savings question. Given this logic, the missing values in college savings were assumed as "no college savings."

Unlike the NMAR, if the variable's pattern of absence can be predicted from several other variables in the dataset, MAR is assumed. For example, if a low-income, male student with a low GPA is less likely to report his test scores than a high-income female student with a high GPA, then these income, gender, and GPA variables predict the "missing-ness" of these test score variables. The MAR pattern is assumed by most methods of dealing with missing data (Little & Rubin, 1987). In terms of the statistical strategies for dealing with missing cases, the default option in the Statistical Package for the Social Sciences (SPSS) is deleting all cases with missing values. However, without MCAR, deleting cases decreases sample size and increases

[12] If possible, deductive imputation "should be used before any other imputation method because it provides accurate or approximately accurate imputations for missing cases" (National Center for Education Statistics, 2011, p.4).

standard errors. For example, using the list-wise missing value deletion approach (default) to deal with missing cases for this dissertation study results in a final sample size of 2,202 (down from 3,997). Also, the characteristics of the study sample excluding all missing cases may differ from the original sample or study population. Thus, a multiple imputation (MI) approach is recognized as a preferred technique for completing missing data.

In this study, the proportions of missing cases in key variables, "meeting school counselors for college information" and "perceived a favorite teacher's college expectations" were more than 20 percent. To identify patterns of the two missing variables, independent t-tests and chi-square analyses with cross-tabulation tables were performed first (see Table 2).

Table 2

Bivariate Analysis Results for Missing Data Analysis

Items	Meeting school counselors	Teacher's college expectation
	χ^2 / *t-test*	χ^2 / *t-test*
Gender	.359	4.916*
Ethnicity	39.978***	51.109***
Number of siblings	1.489	-2.937**
Homework hours	30.989***	.644
Meeting school counselor	---	374.57***
College preparation program	.093	6.515*
Standardized math/reading score	9.818***	14.130***
Discussions about college	29.768***	7.337*
Children's expectations	4.809	67.321***
Parental expectations	54.446***	133.130***
Teacher's expectations	.914	---
Peer's expectations	.932	31.379***
Parental college savings	6.463**	17.363***

Note: *$p < .05$; **$p < .01$; ***$p<.001$.

Overall, the absence of the "school counselor contact information" and "a teacher's expectation-related information" may depend on race, college expectations, academic performance, and parental influences. That is, the results of the bivariate analyses between responding groups and missing groups for the two variables indicate that data are not missing completely at random (MCAR). The Little's MCAR test also confirmed that missing patterns of the data are not missing completely at random (χ^2 =1151.96, $p < .001$). These results suggest the missing patterns as MAR, hence the multiple imputation approach was performed by creating a small number of independent data sets that have missing values imputed (Saunders et al., 2006; Schafer & Graham, 2002; Rubin & Little, 2002).

In general, five versions of the data set with no missing data are created with somewhat different imputed values and statistical analyses are applied to each version of the data. Then, the results are combined to produce parameter estimates and confidence intervals (Rubin, 1987). There is no consensus regarding how many imputed data sets are good enough to produce more accurate estimates depending on the amount of missing data in a data set. According to Schafer (1999), "unless (the) rate of missing information is unusually high, there tends to be little or no practical benefit to using more than five to ten imputations" (p.7). Graham et al. (2007) recommended 20 imputations for 10 percent to 30 percent missing information and 40 imputations for 50 percent missing information (Allison, 2012). Given this advice, 30 imputed versions of the data set were created for this study.

3.4.2 Assumptions for Logistic Regression

Unlike linear regression, logistic regression does not require assumptions of normality and homoscedasticity. However, there are still several issues to be addressed before conducting

multivariate logistic data analysis, such as outliers, multicollinearity, independent errors, linearity, and small/empty cell.

Outliers Outlier analyses need to be undertaken prior to all major analyses. Outliers are values that lie an abnormal distance from other values (Field, 2009). Since outliers affect the values of the estimated regression coefficients, they can make models to be biased. If any cases have a large residual,[13] then they could be outliers. Multivariate outliers were identified by examining leverage indices for each case and defining an outlier as a leverage score three times greater than the mean leverage (Stevens, 2002). Leverage values can lie between 0 (indicating that the case has no outlier/influence) and 1 (indicating that the case has outlier/complete influence).

In this study, the mean leverage was .008, and I found two cases with leverage scores three times greater than the mean value. However, the scores of the two cases were slightly higher than the average (.028) and far from the value 1. To determine whether they should be considered as outliers, another outlier test using standardized residual values was conducted. If the value was greater than 3, the case could be considered an outlier (Field, 2009, p.293). Results of this test found that there were no cases with a standardized residual value above 3 in the study samples. Thus, no cases were removed.

Multicollinearity This assumption requires that independent variables should not be highly correlated with one another. The correlation matrix is one way to detect high correlations between key variables. Correlation vales above .7 or .8 indicate possible multicollinearity

[13] Residuals (or errors) refer to the differences between the values of the outcome predicted by a regression model (predicted value) and the values of the outcome observed in the sample (observed value).

problems. Correlations are invalid for categorical variables because the correlation matrix is based on the Pearson product moment (Pearson's r) rather than polychoric correlations. Given the number of categorical variables in this study, the Variance Inflation Factor (VIF) and tolerance statistics were used as well to verify potential multicollinearity. A VIF value greater than 10 or a tolerance value less than 0.1 is an indication of potential multicollinearity problems (Menard, 1995; Meyers, 1990). Results of this testing found no tolerance values less than 0.1, and no VIF values greater than 10 (see Table 3A). That is, multicollinearity does not exist between independent and outcome variables.

Table 3A

Multicollinearity Test (1)

Model	Collinearity Statistics	
	Tolerance	VIF
Gender	.919	1.088
Ethnicity	.854	1.171
Number of siblings	.980	1.020
Homework hours	.877	1.140
Meeting school counselors	.827	1.210
College preparation program	.976	1.025
Children’s expectations	.957	1.045
Parent's educational level	.966	1.035
College savings	.969	1.032
P-C college discussions	.805	1.242
Parental college expectations	.964	1.037
Friend's college expectations	.795	1.257
Favorite teacher's college expectations	.761	1.315
Math test standardized score	.430	2.327
Reading test standardized score	.437	2.290

a. Dependent Variable: 3 categorical college attendance

However, Pearson's correlation test suggested possible multicollinearity between predictor variables (see Table 4). The correlation between math and reading test scores is strong (r = .734, p <.001). The variance proportions also indicate a potential multicollinearity problem between math and reading scores (see Table 3B). As the bottom row of the Table 3B illustrates, 93 percent and 50 percent of the variance in the regression coefficients of both math and reading test scores are associated with the smallest eigenvalue, which indicates dependency between the two variables. Thus, this study used the standardized math/reading composite score variable that was calculated by the ELS:2002 data distributors, rather than separate math and reading scores.

Independence of errors The assumption of independent errors states that the residual terms of any two observations should not be correlated. This assumption can be violated where students are clustered within classrooms or schools because students within the same class or school have a tendency to be more similar to one another than students from different classes or schools. This assumption is tested with the Durbin-Watson test, which tests for serial correlations between errors. The statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation (Jha et al, 2013). In this study, the Durbin-Watson value was 1.89, which indicates non-autocorrelation. In other words, adjusting for clustering within classrooms and schools may not be necessary to make valid inferences.

Linearity For linear regression, the assumption of linearity states the outcome variable has a linear relationship with the independent variables, but for logistic regression this is not possible because the outcome is categorical. Thus, the assumption in logistic regression is that independent variables, especially continuous predictors, have a linear relationship with the log odds of the outcome variable (Field, 2009, p.273). If this assumption is violated, the logistic

Table 3B

Multicollinearity Test (2)

Eigen value	Const	Variance Proportions														
		Sex	Ethnic	Sibling	Home Work	Counselor	College Prep	C exp	P edu	Savings	Discuss	P exp	Friend	Teacher	Math	Reading
11.659	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.974	.00	.00	.00	.01	.00	.09	.00	.00	.00	.00	.00	.00	.08	.30	.00	.00
.593	.00	.00	.02	.00	.02	.63	.00	.00	.00	.00	.00	.00	.05	.13	.00	.00
.411	.00	.00	.12	.66	.02	.01	.02	.00	.00	.00	.00	.00	.00	.07	.00	.00
.374	.00	.00	.03	.02	.38	.09	.00	.00	.02	.00	.00	.00	.34	.17	.00	.00
.341	.00	.00	.15	.01	.17	.06	.01	.00	.02	.01	.00	.00	.48	.26	.00	.00
.316	.00	.00	.10	.15	.25	.00	.00	.01	.38	.03	.00	.03	.01	.03	.00	.00
.286	.00	.00	.08	.06	.00	.02	.01	.48	.23	.01	.00	.05	.00	.01	.00	.00
.243	.00	.00	.19	.00	.01	.00	.75	.03	.05	.00	.00	.00	.00	.00	.00	.00
.231	.00	.00	.00	.01	.01	.00	.03	.09	.20	.70	.00	.02	.01	.00	.00	.00
.192	.00	.00	.00	.00	.00	.01	.03	.23	.02	.16	.01	.68	.00	.00	.00	.00
.153	.00	.14	.21	.05	.01	.02	.12	.11	.04	.04	.02	.18	.01	.00	.01	.01
.129	.00	.07	.00	.00	.05	.05	.01	.03	.00	.02	.80	.00	.00	.03	.00	.00
.076	.00	.57	.08	.00	.00	.02	.00	.00	.00	.00	.09	.00	.00	.00	.05	.04
.011	.78	.09	.02	.03	.04	.00	.02	.01	.03	.02	.08	.02	.00	.00	.01	.45
.009	.22	.12	.00	.00	.03	.00	.00	.00	.00	.01	.01	.00	.00	.00	**.93**	**.50**

Table 4

Pearson Correlation between Key Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Gender	1															
2. Ethnicity	.011	1														
3. Number of siblings	-.008	**-.099**	1													
4. Homework hours	**.129**	-.017	**-.047**	1												
5. Meeting school counselor	**.092**	.006	.015	**.213**	1											
6. College preparation pro	.099	**.100**	**-.048**	**.038**	**.071**	1										
7. Standardized math score	**-.049**	**.307**	**.055**	**.221**	**.187**	.005	1									
8. Standardized reading score	**.077**	**.306**	.070	**.188**	**.181**	.005	**.734**	1								
9. College discussions	**.179**	.020	.008	**.222**	**.320**	**.082**	**.132**	**.174**	1							
10. Parents' education	**-.031**	**-.047**	.009	.036	**.062**	.010	**.120**	**.136**	**.069**	1						
11. Children's expectations	.001	**-.034**	**.038**	.011	**.111**	**-.026**	.010	.016	**.114**	-.011	1					
12. Parents' expectations	-.033	**.118**	-.018	.008	**.063**	.007	**.132**	**.174**	**.261**	**.072**	**.396**	1				
13. Teacher's expectations	**.102**	**.096**	**-.039**	**.162**	**.223**	**.071**	**.080**	**.078**	**.253**	.027	-.019	.009	1			
14. Peer's expectations	**.087**	**.088**	-.048	**.089**	**.193**	**.053**	**.047**	**.043**	**.170**	.002	-.029	.017	**.429**	1		
15. Parental savings	**.008**	.005	**.032**	**.042**	**.067**	.013	**.094**	**.089**	**.092**	**.095**	.005	**.094**	**.026**	.033	1	
16. College attendance	**.095**	**.067**	-.021	**.265**	**.280**	**.051**	**.421**	**.392**	**.285**	**.108**	**.071**	**.035**	**.190**	**-190**	**.103**	1

Note: *Bold numbers indicate statistical significance at the .05 level*

regression model underestimates the strength of the relationship and fails to detect an effect that is statistically significant (i.e., type II error). This assumption can be tested by looking at whether the interaction term between each continuous independent variable and the log of itself has a statistically significant association with the categorical outcome variable (Hosmer & Lemeshow, 1989). If the interaction term is statistically significant, the assumption is violated. Math/reading test scores, a continuous independent variable, were used to check this linearity assumption, but no statistically significant association was found. In short, this assumption was not violated.[14]

Empty/small cells If cells are formed by categorical predictor variables and outcome variables have very few cases or empty (no observations), the logistic model may become unstable or it might not run at all. The widely accepted criterion for "how large is large enough" is that (Rosner, 1995, p.421): no cell can have an expected frequency less than 1 and no more than 20 percent of the cells can have an expected frequency less than 5. For a 2 by 2 table, no cell can have an expected frequency less than 5. No cells created by categorical independent variables and college attendance outcome variable were empty or small.

3.4.3 Multivariate Analyses: Multinomial Logistic Regression

To explore the research questions, several multivariate analyses were performed. In order to choose an appropriate type of logistic regression model between the ordinal model and multinomial model, the test of parallel lines was performed. Since the ordinal logistic model estimates only one equation over all categories of the outcome variable, a key assumption of ordinal logistic regression is that the slopes of the coefficients in the model is the same across

[14] If the assumption of linearity is violated, categorizing continuous variables is a solution to deal with the problems.

response categories. That is, this assumption tests whether one equation model is valid or not. The null hypothesis is that lines of the same slope are parallel. In this study, the assumption was violated (χ^2 (22) = 75.719, p <.001) (see Table 5). Thus, a multinomial logistic regression (a nonparametric test) was used to estimate the relationship between a set of independent variables and a categorical dependent variable (college attendance), after controlling for other covariates (Allison, 2001).

Table 5

Test of Parallel Lines

	-2 Log Likelihood	χ^2	*df*	*p-value*
Null Hypothesis	3240.065			
General	3164.347[b]	75.719[c]	22	.000

While multiple linear regression is designed to predict *the value of a outcome variable* Y given information from a combination of independent variables (Xs) (see equation 3.1), logistic regression aims to predict "*the probability of Y occurring* given known values of Xs" (Field, 2009, p. 266).

$$Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + \varepsilon \quad (3.1)$$

in which 'a' is the intercept, 'b_n' is the regression coefficient of the corresponding variable X_n, 'X' is the value of the independent variable, and 'ε' is a residual term.

The probability should be expressed as a number between 0 and 1, but the predicted value of the outcome variable in logistic regressions can take any value (i.e., below 0 or above 1), especially when the independent variable is continuous (Field, 2009; Kim, 2009). Thus, when the outcome variable is categorical, a different way to express the probabilities is needed, such as

odds. The odds are defined as the probability (*p*) of an event occurring divided by the probability of that event not occurring (see equation 3.2) (Field, 2009, p. 270).

$$Odds = \frac{P\ (event\ Y)}{1-P\ (event\ Y)} = \frac{P\ (attending\ college)}{1-P\ (no\ college)} \quad (3.2)$$

Based on the equation above, if *p* is 1, the odds become infinity (∞) because any number is infinity times greater than zero, but if *p* is 0, the value of odds is also 0. That is, by transforming probabilities into odds, we can eliminate the upper bound, 1, but the lower bound, 0 is still left. Yet, by taking the log of the odds, we can remove the lower bound as well (Field, 2009). The following table 6 shows the relationship among probability, odds, and log odds.

Table 6

Probabilities, Odds, and Log Odds

Probabilities	*Odds*	*Log Odds (Logit)*
0	0	- ∞
0.01	0.010101	-4.59512
0.1	0.111111	-2.19722
0.5	1	0
0.8	4	1.38629
0.99	99	4.59512
1	+ ∞	+ ∞

Source: Kim, 2009; National Center for Research Method, 2011

Through the series of process, logistic regression equation can be expressed as following:

$$Log\ [\frac{P}{1-P}\ ] = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + \varepsilon \quad (3.3)$$

In which, the coefficient (b_n) is *the amount the log odds changes* with a one unit change in X_n. That is, the equation 3.3 indicates that the independent variables have a linear relationship with the log odds (also called logit) of the outcome variable (National Center for Research Method,

2011). In case of the multinomial logistic regression, outcome variable has three or more categories. Thus, each category is compared to a reference category, providing a number of logistic regression models. For example, since the college attendance outcome variable has three categories, two logit models are computed (no college as a reference category):

$$Log\ [\frac{P\ (Y=\ 2yr\ college)}{P\ (Y=\ no\ college)}] = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + \varepsilon$$

$$Log\ [\frac{P\ (Y=\ 4yr\ college)}{P\ (Y=\ no\ college)}] = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + \varepsilon \quad (3.4)$$

However, it is not easy to interpret or understand the results using log odds. Thus, by applying the reverse of the log (called the exponential) to both sides of the equation, we can eliminate the *log* (Field, 2009; Kim, 2006). As a result, the following equation is established:

$$\frac{P}{1-P} = exp\ (a + b_1X_1 + b_2X_2 + \ldots + b_nX_n) \quad (3.5)$$

In which, $exp(b_n)$ represents *the percentage the odds changes* with a one unit change in X_n, and it is simply called odds ratio (OR). When the predictor variable is binary (e.g, college savings vs. no college savings), OR represents the odds of an outcome Y occurring (e.g., going to college) given a particular condition, divided by the odds of the outcome Y occurring in the absence of that condition (Szumilas, 2010; see equation 3.6).

$$\text{Odds Ratio (OR)} = \frac{odds\ (Xn+1)}{Odds\ (Xn)}\ (\text{e.g., } \frac{odds\ \ (college\ savings)}{Odds\ (no\ saving)}) \quad (3.6)$$

Thus, the OR does not equate with either odds, log odds, or probabilities (Grimes, Kenneth, & Schulz, 2008).

Finally, in order to estimate the fit of the analytic models, logistic regression uses the standard maximum-likelihood (ML), estimating coefficients "that the observed values most likely to have occurred" (Field, 2009, p.267). Since ML estimates are less powerful than OLS, logistic regression analysis requires large sample sizes. For example, while OLS needs 5 cases

per independent variable, ML needs more than 10 cases per independent variable (Statistics Solutions, 2014). The sample size in this study (N= 3,997) is large enough to conduct the logistic regressions.

3.4.4 Mediation Analysis: Baron and Kenny and Bootstrapping

This study is also examined the proposed mediating mechanisms between parents' college savings and two-year or four-year college attendance through parental college expectations, discussions about college with parents, and children's college expectations. Two different types of mediating test techniques were utilized: (1) Baron and Kenny and (2) Multiple Mediation Bootstrapping method.

The Baron and Kenny method is based on four steps of regressions (Table 7). If all four of the steps are met, the statistically significant mediation is indicated (Baron & Kenny, 1986).

Table 7

Baron and Kenny's Four-Step Approach

Step	Relationship	Regression	Path
Step 1 [YX]	The causal variable is correlated with the outcome	$Y=b_0+ b_1X + \varepsilon$	*C*
Step 2 [MX]	The causal variable is correlated with the mediator	$M=b_0+ b_1X+ \varepsilon$	*A*
Step 3 [YM.X]	The mediator affects the outcome variable	$Y=b_0+ b_1M+ \varepsilon$	*B*
Step 4 [YX.M]	The effect of X on Y after controlling for M should be reduced or zero	$Y=b_0+ b_1X+ b_2M+ \varepsilon$	*c'*

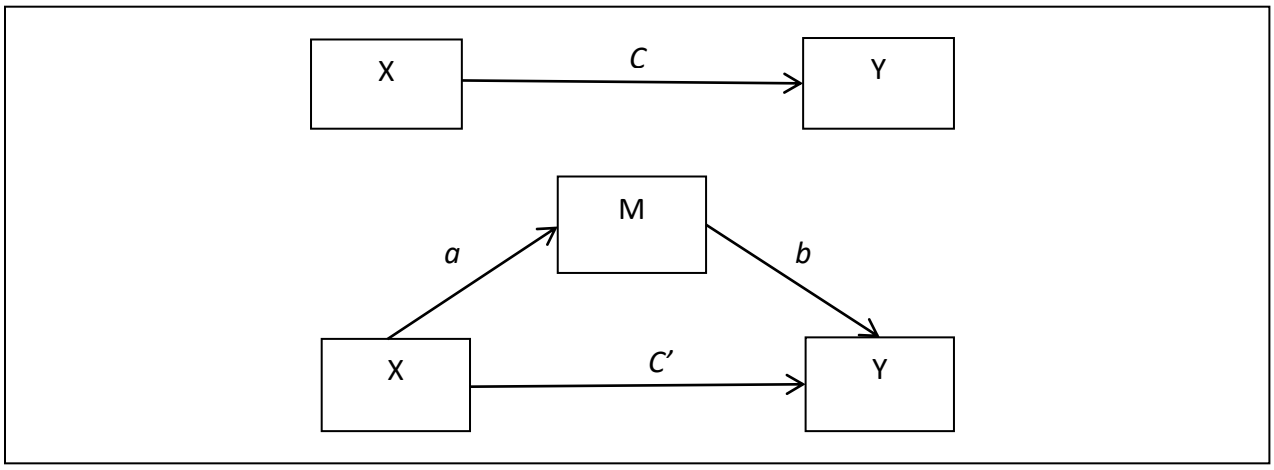
Source: Kenny, D. A. (2013)

Figure 5 depicts a simple mediation model. In the figure, paths *a* and *b* are called indirect effects, and the relationship between X and Y through M (*c'*) is called the direct effect. The path *c* is called the total effect (direct effect + indirect effects). When the direct effect (c') decreases

but not to zero (i.e., statistically significant), partial mediation occurs. If the statistically significant effect of X on Y disappears after controlling for M, full mediation occurs. Though this four-step method is the most commonly used estimate (Hayes, 2009), the Baron and Kenny approach has been criticized. First, this method has relatively low power to detect statistical effects (Fritz & MacKinnon, 2007; Hayes, 2009). Also, the indirect effect is inferred logically through the outcomes of a set of regressions rather than testing its statistical significance (Hayes, 2009). To supplement to the Baron and Kenny approach, the Sobel test was also utilized (Sobel, 1982).

Figure 5

Direct and Indirect Paths



Source: Kenny, D. A. (2013)

The Sobel test calculates the indirect effect by multiplying two regression coefficients (b_2 of the step 4 * b_1 of the step 2). For a statistical significance test, the standard error of *ab* is used. Hayes (2009) reported "the ratio of *ab* to its standard error is used as a test statistic for testing the null hypothesis that the true indirect effect is zero" (p.5). However, the Sobel test assumes normality of the sampling distribution. In addition, while the Sobel test can estimate models with dichotomous outcome variables, it is not appropriate with a dichotomous mediator. A

macro developed by Precher and Hayes (2004)[15] can be used to employ the Sobel test, but including covariates in the mediation model is not allowed, which can lead to biased parameter estimates (Judd & Kenny, 1981).

Given these restrictions, MacKinnon et al. (2002) and Preacher and Hayes (2004) recommend the use of bootstrapping over the Sobel or Baron and Kenny test, asserting that "the former [bootstrapping] have higher power while maintain reasonable control over the Type I error rate" (Preacher & Hayes, 2008, p. 880). Bootstrapping does not impose the assumption of normality of the sampling distribution. Furthermore, while the causal steps approaches, such as the Baron and Kenny, are designed to test a simple mediation (i.e., testing only one mediator at a time), bootstrapping enables a simultaneous testing of multiple mediating effects (Preacher & Hayes, 2008).

This dissertation study hypothesized that the effect of parents' college savings on college attendance via parental expectations for their child to attend college, parent-child discussions about attending college, and children's own expectations for attending college. Since this dissertation study proposed three potential mediators, the multiple mediation model is appropriate - an approach with several advantages. The multiple mediation model informs whether each proposed mediator variable (say, M_1) mediates the effect of X on Y, after controlling for other mediators and relevant covariates in the model. This estimation is more accurate unless the other mediators are not highly correlated with the M_1. That is, the chance of parameter bias because of omitted variables is decreased (Preacher & Hayes, 2008). Also, in addition to the effect of each mediator, the multiple model enables a determination of whether all

[15] The macro is available through Preacher and Hays' website (http://afhayes.com/spss-sas-and-mplus-macros-and-code.html)

the mediators as a set mediate the relationship between X and Y (total indirect effect). However, a significant total indirect effect is not a prerequisite for investigating individual indirect effects (Preacher & Hayes, 2008). Thus, the presence of a non-significant total indirect effect should not be considered as a non-significant specific mediating effect of each mediator. Lastly, researchers are able to know the relative indirect effect size of the mediators. In other words, we can decide which mediator has a larger mediating effect than the other mediators.

CHAPTER 4.0 RESULTS

4.1 DESCRIPTIVE RESULTS OF SAMPLE

Table 8A provides descriptive results of the study sample after multiple imputations were performed. Slightly more than half of students in the study sample in 2002 were female (54 percent). Forty-three (43) percent were white, while 23 percent were Hispanic and 19 percent were African American students. Five (5) percent of sample students were Asian, and another five (5) percent were other ethnic groups, consisting of American Indian, Alaska Native, and other Pacific Islander. The average number of siblings among all students was 1.8 (*M*= 1.78; *SD*= 1.42).

In terms of hours spent on homework, while thirty-one (31) percent spent over seven hours per week, 13 percent of sample students spent less than one hour on homework per week. Two thirds of the students reported they had met with school counselors to receive information about attending college (66 percent), and 23 percent of students participated in college preparation programs. The average standardized math/reading test scores obtained by students in the sample was 48 out of 100 (*M*= 47.75, *SD*= 9.54). Ninety three (93) percent of students reported they had discussed attending college with their parents.

More than half of the parents (54 percent) had no college experience themselves. Twenty-four (24) percent of parents attended a two-year college, and 22 percent of parents attended a four-year college or more. Sixty-nine (69) percent of students expected to attend at least a four-year college, while 11 percent did not expect to attend college. Seventy-five (75) percent of parents expected their children to attend at least a four-year college, 14 percent expected their children to attend a two-year college, and 11 percent did not expect their children to attend any college. Seventy-six (76) percent of sample students perceived their favorite teachers as

expecting them to attend a college and 55 percent perceived their friends as expecting them to attend a college as well. Twenty-four (24) percent of parents had savings accounts for their children's college education.

With respect to eventual college attendance, by 2006, 24 percent of students reported they had attended a two-year college, while 22 percent of students indicated they attended a four year college. More than half of the students (54 percent) reported they had not attended college.

Table 8A

Sample Characteristics

Item	Low-income Sample (before multiple imputation)	Low-income Sample (after multiple imputation)
	% or mean(SD)	% or mean(SD)
Control Variables		
Student is male	46	46
Student's ethnicity		
White (reference)	43	43
African American	19	19
Hispanic	23	23
Asian	10	10
Others	5	5
Number of siblings	1.78 (1.42)	1.78 (1.42)
Parents' educational level		
No college	54	54
Attend 2-year college	24	24
Attend 4-year college or more	22	22
Teacher's college expectations		
No college/others	14	24
Attend any college after high school	50	76
Missing	36	---
Friend's college expectations		
No college/others	36	45
Attend any college after high school	47	55
Missing	16	---
Hours spent on homework		
Less than 1hr (reference)	12	13
1 to 6 hrs.	48	56
Over 7 hrs.	28	31

Missing	12	---
Has gone to counselor for college information		
No	25	34
Yes	50	66
Missing	25	---
Ever in programs to help prepare for college		
No	70	77
Yes	24	23
Missing	6	---
Standardized math/reading test score	47.75 (9.54)	47.75 (9.54)
Mediating Variables		
Discussions about going to college		
Never	6	7
Ever discussed	81	93
Missing	14	---
Children's college expectations		
No college	8	11
Attend 2-year college	17	20
Attend 4-year college or more	63	69
Missing	12	---
Parental college expectations		
No college	10	11
Attend 2-year college	14	14
Attend 4-year college or more	73	75
Missing	3	---
Independent Variable		
College savings variable		
Started a savings account	24	24
Outcome variable		
College Attendance		
No college by 2006	53	53
Attend 2-year college by 2006	20	20
Attend 4-year college by 2006	27	27
Sample size	3,997	4,183

Table 8B provides characteristics of key variables by different ethnic groups from families with low-income (imputed data were used). Asian and white students from families with low incomes were more likely to attend both two-year and four-year college than were African American and Hispanic students. For example, 47 percent of Asian students attended a four-year college while 30 percent of white students and 25 percent of African American and 18

percent of Hispanic students did so. With respect to two-year college attendance, 23 percent of Asian students, 19 percent of both white and African American students, and 18 percent of Hispanic students from families with low-incomes attended a two-year college. With the exception of Asian students (30 percent), regardless of their ethnicity, more than half of the students did not attend college after high school.

In terms of parental college expectations, the majority of Asian parents (91 percent) expected their children to attend a four-year college while six (6) percent expected their children to attend a two-year college and only three (3) percent not expecting their children to attend any college. White parents with low-incomes had the lowest four-year college expectations for their children. More specifically, while 80 percent of Hispanic parents and 75 percent of African American parents expected their children to attend a four-year college, 67 percent of white parents had that expectation. In terms of the two-year college expectations, while 20 percent of white parents expected their children to attend a two-year college, 14 percent of African American parents and 10 percent of Hispanic parents had the same level of college expectations for their children.

The pattern of children's two-year or four-year college expectations for each ethnic group was similar to that of their parents' expectations, but children's college expectations were less than those of their parents. Also, a higher percentage of African American children (72 percent) expected to attend a four-year college than their white counterparts (67 percent). Hispanic children had the lowest expectations of attending a four-year college (62 percent). In terms of two-year college expectations, among all ethnic groups, Hispanic children had the highest expectations of attending a two-year college (26 percent) while 23 percent of white, 17 percent of African American, and 10 percent of Asian students expected to attend a two-year college.

In terms of discussions between parents and their children about attending college, eight percent of both white and Hispanic students and seven percent of African American students reported they never discussed attending college with their parents, while only two percent of Asian students reported this.

Finally, 35 percent of Asian parents and 30 percent of African American parents had some college savings for their children. In comparison, 23 percent of white and 18 percent of Hispanic parents set aside money for their children's higher education.

Table 8B

Characteristics of Key Variables by Ethnicity

	White (%)	African American (%)	Hispanic (%)	Asian (%)	Other (%)
College attendance by 2006					
No college	51	56	64	30	65
Attend 2-year college	19	19	18	23	10
Attend 4-year college	30	25	18	47	25
Parents' college expectations					
No college	13	11	10	3	14
Attend 2-year college	20	14	10	6	15
Attend 4-year college	67	75	80	91	71
Discussions about college-going					
Never	8	7	8	2	9
Children's college expectations					
No college	10	11	12	5	13
Attend 2-year college	23	17	26	10	19
Attend 4-year college	67	72	62	85	68
Having college savings	23	30	18	35	24

4.2 PREDICTING COLLEGE ATTENDANCE

Table 9 illustrates the effect of various factors on two-year (first column) and four-year college attendance (second column) among students from families with low-incomes. Overall, students who are female, have fewer siblings, spent more time on homework, contacted school counselors, achieved higher test scores, and discussed attending college with their parents were more likely to have attended either a two-year or four-year college.

In terms of ethnicity, African American students from households with low-incomes were statistically significantly less likely to attend a two-year college than their white counterparts (*B*= -.157, *Odds Ratio*= .855, $p < .001$), but they were 30 percent more likely to attend four-year college (*B*= .231, *Odds Ratio*= 1.259, $p < .001$) than their white peers. Hispanic students were less likely to attend any college than their otherwise similar white counterparts (*B*= -.094, *Odds Ratio*= .911, $p < .05$; *B*= -.143, *Odds Ratio*= .867, $p < .01$). In contrast, the likelihood of two-year or four-year college attendance among Asian students was far higher than that of whites (*B*=.484, *Odds Ratio*=1.622, $p <.001$; *B*=.638, *Odds Ratio*= 1.893, $p <.001$). Students who belonged to other ethnic groups (e.g, American Indian, Alaska Native, and Pacific Islander) consistently demonstrated a lower likelihood of college attendance than their white peers (*B*= -1.160, *Odds Ratio*=313, $p <.001$; *B*= -.428, *Odds Ratio*=.652, $p <.001$).

Female students were more likely to attend college than male students, after controlling for other covariates (*B*= .319, *Odds Ratio*= 1.375, $p <.001$; *B*= .314, *Odds Ratio*= 1.369, $p <.001$). Among all students from households with low-incomes, as the number of siblings increased by one, the odds of any college attendance decreased by four percent (*B*= -.044, *Odds Ratio*= .957, $p <.01$; *B*= -.037, *Odds Ratio*=.964, $p <.01$). That is, having more siblings has a statistically significant negative effect on any college attendance.

Table 9
Predicting Two-year and Four-year College Attendance

	Attend a 2-year college			Attend a 4-year college		
	B	*S.E.*	*O.R.*	*B*	*S.E.*	*O.R.*
Gender *(male)*	.319***	.022	1.375	.314***	.025	1.369
Race *(white)*						
African American	-.157***	.036	.855	.231***	.039	1.259
Hispanic	-.094*	.039	.911	-.143**	.043	.867
Asian	.484***	.046	1.622	.638***	.042	1.893
Others	-1.160***	.063	.313	-.428***	.058	.652
Number of siblings	-.044**	.009	.957	-.037**	.012	.964
Standardized math/reading	.033***	.002	1.033	.101***	.002	1.107
Parental edu level (no college)						
2-year college	.147***	.026	1.158	.067*	.029	1.069
4-year college	.186***	.036	1.205	.618***	.039	1.855
Parental college savings *(no)*	.127*	.049	1.135	.010	.051	1.010
Parental expectations (*no college*)						
2-year college	1.062***	.109	2.893	1.054***	.253	2.869
4-year college	1.043***	.132	2.839	1.417***	.262	4.126
Teacher expectations *(no college)*	-.013	.089	.987	.349**	.107	1.418
Peer expectations *(no college)*	.366***	.067	1.441	.414***	.066	1.513
Ever discussed going-to-college	.636**	.170	1.899	.967***	.165	2.630
Hours spent on homework (*<1hr*)						
1 to 6 hrs.	-.009	.050	.991	.299***	.073	1.348
Over 7 hrs.	.227**	.062	1.254	1.020***	.081	2.773
Has gone to counselor for college	.734***	.080	2.083	.698***	.063	2.010
Participated in college prep program	-.116**	.040	.890	.091*	.037	1.095
Children's expectations (*no college*)						
2-year college	.529**	.137	1.698	-.119	.143	.888
4-year college	1.062**	.140	2.891	1.950***	.138	7.027
Negelkerke R^2 (pseudo)	.423					

*Note. No college is a reference category of the dependent variable; *p < .05; **p < .01; ***p<.001.*

Academic performance as measured by standardized math/reading test scores was positively associated with college attendance, even after controlling for gender, ethnicity, and other covariates. For every one unit increase in test scores, the odds of attending two-year and four-year college increased by three percent and 10 percent (*B*= .033, *Odds Ratio*=1.033, *p* <.001; *B*= .101, *Odds Ratio*=1.107, *p* <.001). Parents' own completed levels of education were also positively associated with their children's college attendance. Students whose parents attended a two-year college were slightly more likely to attend college compared with students whose parents had not attended any college (*B*= .147, *Odds Ratio*= 1.158, *p* <.001; *B*= .067, *Odds Ratio*= 1.069, *p* <.05). But students whose parents had attended a four-year college were twice as likely to attend four-year college themselves compared with students whose parents had not attended any college (*B*= .618, *Odds Ratio*= 1.855, *p* <.001).

Parental college expectations also have a statistically significant effect on their children's college attendance. Students whose parents expected them to attend a two-year college were approximately three times more likely to attend either a two-year or four-year college than students whose parents had had no college expectations for their children (*B*=1.062, *Odds Ratio*= 2.893, *p* <.001; *B*= 1.054, *Odds Ratio*= 2.869, *p* < .001). Students whose parents expected them to attend a four-year college were about three times more likely to attend a two-year college, four times more likely to attend a four-year college than students whose parents had no college expectations at all for their children (*B*=1.043, *Odds Ratio*= 2.839, *p* <.001; *B*= 1.417, *Odds Ratio*= 4.126, *p* < .001).

In terms of students' perceptions of their favorite teachers and friends about their own college attendance, perceived expectations of teachers were not statistically significantly associated with two-year college attendance though they were, in fact, statistically significantly

associated with the student's ultimate attendance at a four-year college (*B*= .349, *Odds Ratio*= 1.418, $p < .01$). Students who perceived their friends expected them to attend a college after high school were about 1.5 times more likely to attend either a two-year or a four-year college (*B*=.366, *Odds Ratio*= 1.411, $p < .001$; *B*= .414, *Odds Ratio*= 1.513, $p < .001$).

Results indicate parent-child discussions about going-to-college were statistically significantly associated with college attendance as well. Students who had had even one discussion with their parents about attending college were about two times more likely to attend a two-year college and over two and a half times more likely to attend a four-year college (*B*=.636, *Odds Ratio*=1.899, $p < .001$; *B*=.967, *Odds Ratio*=2.630, $p < .001$) than students who had not had similar discussion with their parents. Moreover, spending more time on homework was a strong and positive predictor of college attendance. For example, students who spent over seven hours per week on homework were almost three times more likely to attend a four-year college than otherwise similar students who spent less than one hour per week on their homework (*B*=1.020, *Odds Ratio*=2.773, $p < .001$).

Students who had met with their school counselors to obtain information about attending college were twice as likely to attend college as students who had never met with their counselors (*B*=.734, *Odds Ratio*=2.083, $p < .001$; *B*=.698, *Odds Ratio*=2.010, $p < .001$). Participating in college preparation programs was negatively associated with two-year college attendance (*B*= -.116, *Odds Ratio*=.890, $p < .01$), though positively and statistically significantly related to four-year college attendance (*B*=.091, *Odds Ratio*=1.095, $p < .05$).

Results also suggest students with higher college expectations are more likely to attend a college. Especially, the odds of the students who expected to attend a four-year college

eventually attending a four-year college were seven times more than those of students with no college expectations (*B*=1.950, *Odds Ratio*=7.027, $p < .001$).

With respect to the variable of interest, parental college savings was a statistically significant and positive predictor of two-year college attendance but not of four-year college attendance (*B*=.127, *Odds Ratio*=1.135, $p < .05$; *B*=.010, *Odds Ratio*= 1.010, $p > .05$).

4.3 RESULTS OF MEDIATING TESTS

To explore the possible mediating mechanism as a pathway linking parental college savings and their children's college attendance, the Baron and Kenny approach and multiple mediation bootstrapping test were employed.

4.3.1 Results from the Baron and Kenny Test

Since statistically significant associations among key variables of interest is a necessary condition of mediating effects, bivariate analyses using crosstabs (chi-square analysis, χ^2) were conducted prior to a series of regression analyses suggested by Baron and Kenny (1986). Table 10 shows that there are statistically significant associations among all key variables.

Table 10

Bivariate Analysis (Chi-square) among Key Variables

Model	Parental College Savings			College Attendance		
	χ^2	*df*	*p*	χ^2	*df*	*p*
Parental expectations	63.452	2	<.001	241.14	4	<.001
Discussions about college	6.028	1	<.05	134.90	2	<.001
Children's expectations	25.32	2	<.001	665.20	4	<.001
Parental college savings	---	---	---	38.72	2	<.001

As a first step of the Baron and Kenny procedure, the relationship between parents' college savings and college attendance without mediators was examined (path c in Figure 5; see the first two columns in Table 11). Having college savings was a statistically significant predictor of college attendance, before the influence of mediators were controlled for (*B*= .240, *Odds Ratio*= 1.154, $p < .001$; *B*= .129, *Odds Ratio*=1.138, $p < .05$). That is, the first assumption of the Baron and Kenny was satisfied.

Second, three separate logistic regressions were performed to test the associations between college savings and each of the hypothesized mediators (path a in Figure 5; see Table 12). Results illustrate one cell created by college savings (yes/no) and parental college expectations (no college, two-year college, and four-year college or beyond) had very few observations. Thus, for this model the variable of parental college expectations was recoded as a dichotomous variable where '0' represents two-year college or less and '1' represents four-year college or beyond.

As the Table 12 illustrates, college savings were statistically significantly and positively associated with parents' expectations for their children to attend a four-year college (*B*= .931, *Odds Ratio*= 2.536, $p < .001$) as well as with the discussions they had had with their children about attending college (*B*= .230, *Odds Ratio*= 1.258, $p < .05$). However, there was no statistically significant association between college savings and children's college expectations. In the case of children's college expectations, the second assumption of the Baron and Kenny method was not satisfied.

Finally, to examine whether the regression coefficient between college savings and college attendance decreases or is no longer statistically significant when each mediator is entered into the models, additional multinomial regression models were analyzed. Relevant

Table 11

Baron & Kenny: Predicting College Attendance with/without Mediators

Items	No Mediators (M)		M1: Parental Expectations		M2: College Discussions		M3: Children expectations	
	2yr college *B (SE)*	*4yr college* *B (SE)*	*2yr college* *B (SE)*	*4yr college* *B (SE)*	*2yr college* *B (SE)*	*4yr college* *B (SE)*	*2yr college* *B (SE)*	*4yr college* *B (SE)*
Gender (*male*)	**.384 (.021)**	**.453 (.025)**	**.378 (.020)**	**.432 (.024)**	**.357 (.022)**	**.421 (.024)**	**.337 (.021)**	**.358 (.026)**
Race (*white*)								
African American	-.030 (.035)	**.490 (.030)**	**-.094 (.036)**	**.389 (.032)**	-.040 (.037)	**.478 (.033)**	**-.121 (.032)**	**.280 (.035)**
Hispanic	.012 (.037)	.005 (.039)	**-.039 (.038)**	-.077 (.040)	.005 (.038)	.001 (.040)	-.026 (.037)	-.059 (.041)
Asian	**.648 (.045)**	**.924 (.041)**	**.586 (.044)**	**.832 (.041)**	**.618 (.047)**	**.892 (.041)**	**.556 (.040)**	**.750 (.040)**
Others	**-1.084 (.065)**	**-.273 (.054)**	-1.109 (.064)	**-.298 (.053)**	**-1.097(.065)**	**-.286 (.053)**	**-1.145 (.064)**	**-.413 (.064)**
Number of siblings	**-.042 (.009)**	**-.027 (.012)**	**-.044 (.009)**	**-.031 (.011)**	**-.041 (.008)**	**-.026 (.012)**	**-.041 (.009)**	**-.035 (.012)**
Standardized math/reading	.047 (.001)	**.125 (.002)**	**.043 (.002)**	**.119 (.002)**	**.045 (.002)**	**.124 (.002)**	**.038 (.001)**	**.108 (.002)**
P edu level (no college)								
2-year college	**.253 (.028)**	**.236 (.030)**	**.230 (.027)**	**.214 (.030)**	**.240 (.027)**	**.217 (.029)**	**.201 (.028)**	**.130 (.029)**
4-year college	**.288 (.033)**	**.776 (.036)**	**.251 (.034)**	**.718 (.036)**	**.293 (.036)**	**.772 (.038)**	**.239 (.033)**	**.688 (.035)**
P college savings *(no)*	**.240 (.048)**	**.129 (.048)**	**.203 (.048)**	.087 (.046)	**.233 (.049)**	**.117 (.049)**	**.217 (.046)**	**.106 (.046)**
P expectations (*no college*)								
2-year college			**.397 (.060)**	**-.353 (.081)**				
4-year college			**.749 (.043)**	**.722 (.060)**				
Ever discussed college					**.922 (.144)**	**1.375 (.132)**		
C expectations (*no college*)								
2-year college							**.778 (.119)**	.140 (.141)
4-year college							**1.328 (.112)**	**2.298 (.129)**
Teacher expects college	.112 (.090)	**.564 (.088)**	.081 (.091)	**.523 (.092)**	.056 (.089)	**.497 (.091)**	.033 (.088)	**.409 (.104)**
Peer expects college	**.488 (.064)**	**.639 (.057)**	**.487 (.063)**	**.635 (.058)**	**.475 (.063)**	**.626 (.056)**	**.385 (.067)**	**.443 (.066)**
Homework (*<1hr*)								
1 to 6 hrs.	**.167 (.050)**	**.575 (.065)**	**.137 (.049)**	**.546 (.068)**	**.135 (.050)**	**.546 (.068)**	.025 (.049)	**.338 (.075)**
Over 7 hrs.	**.417 (.060)**	**1.359 (.072)**	**.379 (.059)**	**1.314 (.074)**	**.392 (.061)**	**1.33 (.076)**	**.252 (.063)**	**1.066 (.082)**
Has gone to counselor	**.972 (.076)**	**.985 (.053)**	**.948 (.077)**	**.966 (.054)**	**.900 (.075)**	**.916 (.054)**	**.796 (.080)**	**.779 (.062)**
Participated in college prep	-.056 (.034)	**.187 (.032)**	-.064 (.034)	**.171 (.032)**	-.059 (.035)	**.182 (.033)**	**-.106 (.039)**	**.105 (.038)**
Negelkerke R^2 (pseudo)	.208							

Note. No college is a reference category; *Bold numbers indicate statistical significance at the .05 level*

Table 12

Baron and Kenny: Predicting Mediators

	M1: Parental College Expectations		M2: Parent-Child Discussions		M3: Children's College Expectations			
	Expect to attend a 4yr college		Ever discussed about college		Expect to attend a 2yr college		Expect to attend a 4yr college	
	B(SE)	*O.R.*	*B(SE)*	*O.R.*	*B(SE)*	*O.R.*	*B(SE)*	*O.R.*
Gender *(male)*	.582(.020)***	1.790	.877(.072)***	2.405	.109(.142)	1.115	.417(.138)**	1.517
Race *(white)*								
African American	1.025(.039)***	2.786	.627(.105)***	1.873	-.164(.219)	.849	.541(.206)**	1.718
Hispanic	1.555(.033)***	4.733	.542(.094)***	1.719	.119(.185)	1.126	.280(.175)	1.324
Asian	1.866(.124)***	6.465	1.509(222)***	4.523	-.050(.352)	.951	.733(.326)*	2.082
Others	.373(.061)**	1.453	-.051(.146)	.950	-.215(.312)	.806	.171(.296)	1.186
Number of siblings	.065(.011)***	1.067	-.019(.027)	.981	-.060(.049)	.942	-.033(.051)	.968
Standardized math/reading	.089(.002)***	1.093	.062(.004)***	1.064	.038(.009)***	1.038	.102(.009)***	1.108
Parental edu level								
2-year college	.355(.031)***	1.426	.291(.071)***	1.388	.104(.178)	1.110	.528(.174)**	1.696
4-year college	.741(.038)***	2.097	.121(.099)***	1.128	.097(.223)	1.102	.691(.212)**	1.996
Parents had college savings	.931(.085)***	2.536	.230(.110)*	1.258	.206(.188)	1.229	.282(.185)	1.325
Teacher expectations					.022(.208)	1.023	.577(.204)**	1.781
Peer expectations					.076(.194)	1.079	.843(.182)***	2.322
Homework (*<1hr*)								
1 to 6 hrs.					.493(.179)**	1.637	1.106(.172)***	3.021
Over 7 hrs.					.533(.242)*	1.705	1.566(.241)***	4.785
Has gone to counselor					1.693(.183)**	5.433	2.107(.177)***	7.225
Participated in college prep					-.024(.184)	.977	.395(.179)*	1.484
Negelkerke R^2 (pseudo)		.264		.106				.368

*Note. No college expectation group is a reference; *p < .05; **p < .01; ***p<.001.*

demographic and control variables were included in all models. As Table 11 illustrates, once the parental college expectations variable is added into the model, the unstandardized coefficient of college savings predicting two-year college attendance decreased from .240 to .203, but the relationship between the two remained statistically significant (*B*= .203, *Odds Ratio*= 1.225, *p* <.001; see Table 11, M1). The regression coefficient of college savings predicting four-year college attendance was no longer statistically significant, once parents' expectations were controlled (*B*= .087, *Odds Ratio*= 1.225, *p*= .072). The result suggests that the effect of college savings on college attendance was mediated by parental college expectations.

As for the discussions between parents and their children about attending college, the unstandardized coefficients of college savings predicting two-year and four-year college attendance were slightly decreased when this discussion variable was controlled for, but the relationship was still statistically significant (*B*= .233, *Odds Ratio*= 1.262, *p* <.001; *B*= .117, *Odds Ratio*=1.124, *p* <.05; see Table 11, M2). These results suggest discussions about college act as a partial mediator in the relationship between college savings and college attendance. Even though children's college expectations were a statistically strong predictor of college attendance, the expectation variable was not a mediator due to the lack of statistically significant association with college savings.

In short, findings from the Baron and Kenny approach suggest parents' expectations for their children to attend college and parent-child discussions about attending college serve as mediators in the relationship between college savings and college attendance, but there was no evidence of a mediating effect of children's college expectations on attending college. Table 13 presents the summary results from the Baron and Kenny approach based on seven logistic regression models discussed above.

Table 13

Summary Results from the Baron and Kenny Test

	Mediators	M1: Parental college Expectations			M2: Parent-Child Discussions			M3: Children's College Expectations		
		B	*S.E.*	*O.R.*	*B*	*S.E.*	*O.R.*	*B*	*S.E.*	*O.R.*
Attend a 2year college	B(YX)	.240***	.048	1.271	.240***	.048	1.271	.240***	.048	1.271
	B(MX)	.931***	.085	2.536	.230*	.110	1.259	.282	.185	1.325
	B(YM.X)	.749***	.043	2.115	.922***	.144	2.514	1.328***	.112	3.773
	B(YX.M)	.203***	.048	1.225	.233***	.049	1.262	.217***	.046	1.243
		B	*S.E.*	*O.R.*	*B*	*S.E.*	*O.R.*	*B*	*S.E.*	*O.R.*
Attend a 4year college	B(YX)	.129*	.048	1.138	.129*	.048	1.138	.129*	.048	1.138
	B(MX)	.931***	.085	2.536	.230*	.110	1.259	.282	.185	1.325
	B(YM.X)	.722***	.060	2.058	1.375***	.132	3.954	2.298***	.129	9.955
	B(YX.M)	.087	.046	1.090	.117*	.049	1.124	.106*	.046	1.112

*Note: *p < .05*; ***p < .01*; ****p<.001*; *As for the children's college expectations, expectations with 4yr college or more vs. no college expectation model is reported.*

4.3.2. Results from the Multiple Mediation Bootstrapping

Baron and Kenny results suggest that when the mediators were added into the regression models, the effect of having college savings on college attendance decreased. In order to assess whether the decreased effects are statistically large enough to conclude the proposed mediators significantly mediate the association between college savings and college attendance, another mediation analysis was conducted using bootstrapping methods with bias-corrected confidence estimates (Preacher & Hayes, 2008). As previously discussed, while the Baron and Kenny approach is designed to test only one mediator at a time, bootstrapping approach enables a simultaneous testing of multiple mediating effects (Preacher & Hayes, 2008). Thus, it provides more accurate estimation of the mediation effect of each mediator, after controlling for other mediators and covariates.

Results from multiple mediation bootstrapping based on 5,000 resamples (i.e., estimating indirect effects in each resampled data set) are reported in Table 14.

Table 14

Results from the Multiple Mediation Bootstrapping

	B (SE)	*p-value*
Total effect	.0897 (.038)	.018
Direct effect	.0068 (.035)	.845
	95% CI	
Mediators	Lower	Upper
Parental college expectations	.0400	.0659
Discussions about college-going	.0042	.0218
Children's college expectations	-.0002	.0384
Total indirect effect	.0548	.1102
P Expectation vs. Discussions	.0250	.0563
P Expectations vs. C Expectations	.0116	.0543
Discussions vs. C Expectations	-.0267	.0116

First, the total and direct effects on college attendance were .090 ($p < .05$) and .007 ($p = .844$), respectively. Taken together, the three mediators (i.e., parents' college expectations, their discussions with their children about attending college, and children's own expectations for attending college) do mediate the effect of college savings on college attendance. That is, there was a statistically significant total indirect effect through the three mediators because its 95 percent bootstrap confidential interval (CI) does not contain zero [.0548, .1102].

An examination of the specific mediating effects suggests parents' expectations for their child attending college were a statistically significant mediator with 95 percent bootstrapping CIs of .0400 to .0659; and parent-child discussions about attending college also serve as a mediator with 95 percent bootstrapping CIs of .0042 to .0218. However, the 95 percent CIs of children's

college expectations include zero [-.0002, .0384], which indicates no statistically significant mediating effect of children's expectations between savings and college attendance. Finally, examination of the pairwise contrasts of the indirect effects shows that the specific indirect effect through parental college expectations was larger than the specific indirect effect through college discussions with 95 percent CIs of .0250 to .0563.

Hence, the results of the Baron and Kenny and bootstrapping tests consistently suggest the statistically significant mediating role of parental expectations for their children to attend college and discussions about attending college in the relationship between college savings and college attendance among children from families with low-incomes. However, a mediating effect of children's own college expectations was not supported.

4.4 PREDICTING CHILDREN'S COLLEGE EXPECTATIONS

To examine the effect of parent-child discussions about college on children's college expectations (second research question), another multinomial logistic regression analysis was conducted. As the Table 15 illustrates, parent-child discussions were statistically significantly associated with expectations for attending two-year or four-year college among children from households with low-incomes, even after adjusting for the other covariates. More specifically, children who "ever" discussed attending college with their parents were about 4.5 times more likely to expect to attend a two-year college (B= 1.522, *Odds Ratio*= 4.582, p <.001), and over eight times more likely to expect to attend a four-year college than children who never engaged in such discussions (B= 2.116, *Odds Ratio*= 8.295, p <.001). Furthermore, parent's expectations for their children to attend college are statistically significant and positively associated with their children's own expectations for college attendance.

Table 15

Predicting Children's College Expectations

	Expect to attend a 2-year college			Expect to attend a 4-year college		
	B	*S.E.*	*O.R.*	*B*	*S.E.*	*O.R.*
Gender *(male)*	-.086	.077	.918	.180*	.072	1.197
Ethnicity *(white)*						
African American	-.273	.147	.761	.328*	.105	1.388
Hispanic	.011	.127	1.011	-.093	.058	.911
Asian	-.211	.204	.810	.298	.186	1.348
Others	-.178	.189	.837	.157	.189	1.273
Number of siblings	-.067*	.025	.935	-.043	.032	.958
Standardized math/reading	.030***	.006	1.030	.081***	.006	1.170
Parental edu level *(no college)*						
2-year college	.063	.100	1.065	.453***	.090	1.572
4-year college	.361*	.137	1.435	.641***	.142	1.899
Parents had college savings	-.091	.100	.913	-.072	.104	.931
Parental expectations (*no college*)						
2-year college	.792***	.142	2.208	.369*	.142	1.447
4-year college	.676***	.148	1.967	1.312***	.166	3.712
Teacher expectations *(no college)*	-.215	.189	.806	.226	.193	1.254
Peer expectations *(no college)*	.017	.142	1.017	.815***	.132	2.258
Ever discussed going-to-college	1.522***	.159	4.582	2.116***	.195	8.295
Hours spent on homework (*<1hr*)						
1 to 6 hrs.	.318**	.105	1.375	1.107***	.116	2.764
Over 7 hrs.	.355^{+}	.194	1.427	1.419***	.197	4.132
Has gone to counselor for college	1.499***	.130	4.477	1.865***	.136	6.458
Participated in college prep program	-.080	.114	.923	.419**	.107	1.520
Negelkerke R^2 (pseudo)	.467					

*Note. No college expectation group is a reference; *p < .05; **p < .01; ***p<.0*

That is, children whose parents expected them to attend a four-year college were approximately four times more likely to expect attend a four-year college (*B*= 1.312, *Odds Ratio*= 3.712, *p* <.001).

African American and Asian students from households with low-incomes were more likely to expect to attend a four-year college than their otherwise similar white peers (*B*=.328, *Odds Ratio*= 1.388, *p* <.05; *B*=.297, *Odds Ratio*= 1.348, *p* >.05). Hispanic students' expectations to attend a four-year college were lower than their white counterparts, but the difference is not statistically significant. Females were also more likely to expect to attend a four-year college than male students (*B*=.180, *Odds Ratio*= 1.197, *p* <.05). In contrast, student's expectations for attending a two-year college did not differ by either ethnicity or gender.

Math/reading scores, hours spent on homework per week, meeting school counselors, and participating in a college preparation programs were significantly and positively associated with children's expectations for attending college. More specifically, for every one unit increase in test scores, the odds of expectations for attending either a two-year or four-year college increased by three percent and eight percent, respectively (*B*= .030, *Odds Ratio*=1.030, *p* <.001; *B*= .081, *Odds Ratio*=1.170, *p* <.001).

Students who spent over seven hours per week on homework were four times more likely to expect to attend a four-year college than otherwise similar students who spent less than one hour per week on their homework (*B*=1.419, *Odds Ratio*=4.132, *p* <.001). Also, students who met with their school counselors to obtain information about attending college were four times more likely to expect to attend a two-year college and six times more likely to expect to attend a four-year college than students who never met with their counselors (*B*=1.499, *Odds Ratio*=4.477, *p* <.001; *B*=1.865, *Odds Ratio*=6.458, *p* <.001). Students who participated in

college preparation programs were 1.5 times more likely to expect to attend a four-year college (*B*=.419, *Odds Ratio*=1.520, $p < .01$). Finally, children who perceived their close friends as expecting them to attend college after high school were over two times more likely to have their expectations for attending a four-year college (*B*=.815, *Odds Ratio*= 2.258, $p < .001$), but teachers' expectations for children attending college did not have a statistically significantly effect on students own expectations for their college attendance.

4.5 SUMMARY

This dissertation study tested the following three research hypotheses. First, the effect of parents' college savings on their children's two-year or four-year college attendance was investigated, hypothesizing the statistically significant and positive association between college savings and college attendance. Partially supporting the first hypothesis, this study found the statistically significant and positive association between parents' saving money for their children to attend college and the children, in fact, attending a two-year college (there was not a similar effect found for attending a four-year college). Second, this study pays special attention to the significant role of parents' discussions about attending college with their children as a way to predict college attendance. Thus, along with parents' and children's expectations for attending college, the potential mediating role of these discussions between college savings and college attendance was hypothesized. Results from both the Baron and Kenny method and bootstrapping test suggest the statistically significant mediating effect of discussions about attending college in the relationship between college savings and ultimate college attendance. In addition, a mediating effect of parents' expectations for their children to attend college was also found, but children's own college expectations was not found to be a statistically significant mediator between savings and college attendance among these children from families with low-incomes.

Third, the positive association between discussions about attending college and children's own expectations for attending college was also hypothesized. Supporting this hypothesis, children who "ever" discussed attending college with their parents were about 4.5 times more likely to expect to attend a two-year college and over eight times more likely to expect to attend a four-year college than children who never engaged in such discussions. Math/reading scores, hours spent on homework per week, meeting school counselors, and participating in a college preparation programs were also positively associated with children's expectations for attending college.

CHAPTER 5.0 DISCUSSIONS/IMPLICATIONS FOR POLICY, PRACTICE, AND RESEARCH

This chapter provides a discussion of the study findings. Next, it explores the implications of the findings for social work policy and practice. The chapter also discusses limitations of this study and closes with suggestions for future research.

5.1 DISCUSSIONS OF RESEARCH FINDINGS

5.1.1 Effect of College Savings on College Attendance

College Savings and Two-Year College Attendance

The results indicate the statistically significant and positive association between college savings and two-year college attendance, partially supporting the first hypothesis of this study. When parents have savings for their children's higher education, the likelihood of their children's attending a two-year college was significantly greater than that for children without college savings. This finding is consistent with a previous study by Charles, Roscigno, and Torres (2007). Even though their study samples were not restricted to students from families with low-incomes, they also found that children whose parents have college savings for their children by eighth grade are 30 percent more likely to attend a two-year college than similar children without parental college savings. The positive effects of savings on college attendance could be attributed to various financial, psychological, and social effects. Asset theory suggests that accumulated assets, such as college savings, provide financial capacity to invest in their children's education, such as purchasing books, a computer, tutoring, and school tuition, which positively affect children's academic performance and ultimate college attendance. The theory also posits that having savings for college education increases or maintains expectations for attending college and encourages parental support for their children's college-going plans (e.g.,

college discussions). Findings of the statistically significant association of college savings with two-year college attendance support this theory.

College Savings and Four-Year College Attendance

Unlike the two-year college outcome, findings suggest that parents' college savings have no statistically significant influence on four-year college attendance among children from low-income families. This finding is inconsistent with several existing studies. For example, Charles, Roscigno, and Torres (2007) reported the statistically significant relationship between parental college savings and four-year college attendance, even after controlling for parents' expectations, income, and other background variables. Song and Elliott (2012) also found that parents' college savings to be statistically significantly associated with four-year college attendance via college expectations among Hispanic students in the U.S. However, the inconsistency found in this dissertation study may result from the different study samples and ways each study measures parents' college savings. The sample in this dissertation study was children from families with low-incomes, while the sample used by Charles, Roscigno, and Torres (2007) as well as Song and Elliott (2012) were not limited to children from families with low-incomes. In addition, while this dissertation study focuses on the general savings accounts as a savings vehicle for children's higher education, types of college savings were not specified either of the aforementioned studies. General savings accounts are the most frequently used savings vehicles for paying for college among parents with low-incomes (Sallie Mae, 2014), but the savings accounts do not have strong withdrawal restrictions and financial incentives. The presence of parents' college savings itself, especially as a form of general savings accounts, seems not to be enough to increase four-year college enrollment for students from families with low-incomes.

Insufficient amounts of accumulated money in the parents' college savings accounts might be a plausible reason for the lack of influence college savings appear to have on four-year college attendance among the students in this sample. For example, Charles et al. (2007) found for every unit increase in amount of money saved, there was a corresponding three percent increase in the likelihood that the child will attend a four-year college. Tuition at most four-year colleges is more expensive than tuition at two-year colleges, thus four-year college attendance is less accessible for students with low-incomes. In 2014-15, the average published tuition and fee price for in-state students ($ 9,139) and for out-of-state students ($22,958) enrolled full-time at public four-year colleges were about three times and seven times higher, respectively, than the price for students enrolled full-time at public two-year colleges ($3,347) (College Board, 2014). Considering the lack of financial resources among low-income households, accumulating enough money for college tuition and fees for four-year colleges may not be easy and may contribute to the lack of impact of college savings found in my study. Further research is required to advance the understanding of the role of amount of money saved in the parents' college savings accounts as a predictor of four-year college attendance among students from households with low-incomes.

College Savings and Children's College Expectations

The Wisconsin Model of status attainment emphasizes "children's expectations for attending college" as one of the most decisive contributors to their ultimately attending college. Findings from this study support the theory, with results showing that students who expected to go to a four-year college are seven times more likely to attend a four-year college when compared with otherwise similar students who hold no such expectation to attend college. Similarly, the theoretical framework of this study suggests the positive association between parents' college savings and their children's college expectations. Findings of previous studies

also support this hypothesis. For example, Song and Elliott's study (2012) found the significant role of parental college savings in increasing children's college expectations among Hispanic students. Charles, Roscigno, and Torres (2007) found the positive impact of college savings on children's expectations, even after controlling for demographic and other covariates. Yet, findings from the study under discussion indicate that parents' college savings are not significantly predictive of children's own expectations for attending college when they are from families with low-incomes. Due to the lack of a significant relationship between savings and expectations, the hypothesized mediating role of children's college expectations between college savings and college attendance is not supported.

Despite these unexpected findings, the statistically non-significant effect of parental college savings on their children's expectations for attending college could be explained in several ways. From the perspective of Identify-Based Motivation (IBM) theory, if children are not aware of the presence of college savings for their future education, their college-bound identity (expectations) cannot be reinforced by identities, such as "a saver for college" or "a child of parents who support their education through college savings." That is, children's lack of recognition of their parents' savings for them to attend college could be considered a plausible reason for the non-significant effects of college savings on enhancing children's college expectations. According to a recent survey (T. Rowe Price, 2015), one third of the children surveyed were not aware if their parents were saving for their education. Existing literature has identified parents with low-incomes to be less likely to communicate or interact with their children compared with parents who have higher incomes (Bradley & Corwyn, 2002; Elder, Vannguyen, & Caspi, 1985; Smetana, Crean, & Daddis, 2002), which may increase the possibility their children are unaware of existing college savings. In addition, even though

parents set aside money for their children's college education, the accumulated money could be used for other urgent purposes before their children reach college age (i.e., medical bills, auto/house repair, and repayment of debts). Since general savings accounts do not have strong withdrawal restrictions, parents are able to use the money more easily for other purposes rather than children's college costs (Schreiner & Sherraden, 2007). Further research should examine the relationship between the types of college savings, conditions for withdrawal, amount of savings, as well as how those savings may change over time (via withdrawals for other purposes etc.) and expectations for attending college in order to understand more clearly the underlying mechanism of the relationship that was found in this study.

5.1.2 Importance of Parent-Child Discussions about College

Discussions between parents and children about their plans for attending college are a process of sharing information and transmitting parents' expectations. However, no existing studies have examined the potential mediating role these discussions have in the relationship between college savings and college attendance. Also, relatively little work has examined the role of discussions about college in boosting children's expectations for attending college and subsequent enrollment among children from families with low-incomes. Thus, the current study is unique in the attention it pays to the role of discussions about attending college between parents and children.

College Savings and Parent-Child Discussions

Confirming the second hypothesis, children from families with low-incomes whose parents have college savings are more likely to discuss attending college with their parents, which in turn increase the likelihood of actually attending any college. This dissertation is distinguished as the first study focusing on families with low-incomes to examine the potential

association between college savings and parent-child discussions about college. The finding is consistent with previous research that included families regardless of income levels. Charles, Roscigno, and Torres (2007) found that parents who set aside money for their children's higher education are statistically significantly more likely to talk about attending college with their children. Myers and Myers (2012) found that parents' engagement in college preparation activities affect parent-child communications about college. Setting aside money for their children's future education is an active form of college preparation and associated with parents' information about college (O'Connor, Hammack, & Scott, 2010). In this context, parents with college savings could be more interested in college issues, such as college costs, available financial aid, and other college preparations, which motivate them to talk with their children about attending college.

College Discussions and College Expectations

Another finding of this study is the strong association between parent-child discussions about attending college and children's expectations for attending a two or four-year college among children from families with low-incomes. More specifically, children who "ever" talked about college with their parents are over eight times more likely to have expected to attend a four-year college than otherwise similar children who never engaged in these discussions. This finding is consistent with results from a previous study using children from all income levels. Myers and Myers (2012) suggest the positive association between college discussions and children's college aspiration. Also, Identity-Based Motivation (IBM) theory suggests that for children from low-income backgrounds, discussions with their parents about college plans can serve as a positive contextual cue allowing them to obtain useful information and to receive verbal encouragement, which reinforces their expectations and academic efforts (Oyserman &

Destin, 2010). In addition, children's awareness of the presence of parental college savings may affect their expectations for attending college. While discussing the possibility of attending college, children might be informed about the ways their parents are preparing for their higher education, including whether or not parents are setting aside money for college. Due to the constraints of secondary data, there is no way to know what kinds of information were actually shared during parent-child conversations about attending college in this study. Thus, using qualitative data to identify the content of these discussions is an important question for future study.

College Discussions and College Attendance

This study also found a statistically significant role in parent-child discussions about attending college and the impact they have for children from households with low-comes on ultimately attending college. That is, communication between parents and their children about attending college affect their children's ultimate college attendance. This finding is consistent with previous studies. Perna and Titus (2005) reported that parent-child discussions about education-related topics significantly increased the likelihood of children attending either a two-year or four-year college. Using data from the National Educational Longitudinal Studies (NELS:88), Sandefur et al. (2006) have consistently found the statistically significant role of parent-child discussions in increasing the likelihood of four-year college attendance versus a two-year college attendance or no college enrollment at all.

5.1.3 Parents' College Expectations

College Savings and Parents' Expectations

The results suggest that the statistically significant association between college savings and college attendance is mediated by parental expectations for their children to attend college.

In other words, having college savings could be a way to maintain or increase low-income parents' college expectations, which in turn affect their children's college attendance. The finding of a statistically significant association between college savings and parents' college expectations is consistent with several existing studies. Through an experimental study called SEED OK, Kim et al (2013) found that treatment group mothers who have savings accounts for their children demonstrated a significantly higher level of college expectations than the control group without savings. The impact of savings on mothers' college expectations appears greater for the economically disadvantaged group. Song and Elliott's study (2012) found the full mediating effect of parental expectations on the relationship between savings and Hispanic students' college attendance, which is in line with the findings of this study.

Yet, the possible reciprocal effects between college savings and parents' expectations should be addressed. To establish causal ordering, "college savings → parental college expectations," one important condition is necessary, that of temporal precedence (time order) (Holland, 1986). In the study under discussion, even though parents were asked about college savings and expectations in 2002, the action of having opened a savings account for college preceded expectations for their children to attend college at the time of the survey questions were asked. In order to identify whether savings cause expectations or the reverse, simultaneous tests were performed. For example, Yadama and Sherraden (1996) found that holding assets, such as savings, has a stronger association with parents' expectations for their children's future than the reverse. Elliott and his colleagues (2011) also performed a simultaneous test and concluded that savings for college have a slightly stronger association with expectations for attending college than expectations have with savings. However, these two existing studies did not restrict their samples to families with low-incomes. Also, Elliott's study (2011) focused on children's savings

and their expectations. Certainly, more studies are required to clearly identity the causal relationship between college savings and parental expectations for their children's college attendance.

Parents' Expectations and Children's Educational Outcomes

This study also supports the strong effect of parents' expectations for their children to attend college on their children's own college expectations as well as on real college attendance among children from families with low-incomes. Children whose parents expected them to attend a four-year college are about three times more likely to *expect* to attend a four-year college. Furthermore, children whose parents expect them to attend a four-year college are four times more likely to *attend* a four-year college when compared with children whose parents do not expect them to attend any college. Although this finding is not new to the literature, it confirms the important role of parents' expectations for their children's higher education among families with low-incomes. The effect of parents' expectations on their children's college attendance is a major assumption of the Wisconsin Model (Sewell, Haller, and Portes, 1969), and many existing studies support this positive association (e.g., Sewell & Hauser, 1980; Cheng & Starks, 2002; Song & Elliott, 2012; Wentzel, Battle, Russell, & Looney, 2010).

By stressing the importance of parental expectations for their children to attend college, Johnson et al. (2005) also reported that 70 percent of young adults on college paths reported their parents had high expectations that their children would attend college. In contrast, among young adults without college degrees, only 30 percent of their parents expected their children to attend college. Since parental expectations are directly associated with parents' financial and emotional supports and attitudes toward their children's educational journey, the strong association between parents' college expectations and their children's educational outcomes is not surprising.

5.2 STUDY LIMITATIONS

The findings from this study should be considered mindful of its limitations. First, "uncertainty of omitted variable bias" is a limitation. Students whose parents had college savings accounts may differ from other students whose parents do not have such savings in ways that affect two-year or four-year college attendance but are not measured by the ELS:2002. For example, parents with college savings may have more financial literacy and information about available financial aid (O'Connor, Hammack, & Scott, 2010). These parents also may have more financial resources of other types, such as net worth, bonds, or other forms of savings. In addition, grandparents or other relatives may contribute to financing children's college attendance. Thus, the effect of parental college savings could be spurious. This is dealt with, in part, by controlling for various factors that are commonly associated with college attendance, but these alternative explanations cannot be fully ruled-out in the existing study.

Second, this dissertation study used students' standardized math/reading test scores as a proxy of academic ability. Though math/reading test scores are a good indicator of academic achievement, they may not be enough to measure a student's overall academic aptitude and measured intelligence (also called mental ability) (Sewell & Hauser, 1976). The original Wisconsin Model used students' grades in high school and the Henmon-Nelson test to measure academic aptitude (Alexander, Eckland, and Griffin, 1975). Later, to improve the measure of academic aptitude, Jencks, Course, and Mueser (1983) used a test developed by the Educational Testing Service (ETS) that emphasizes vocabulary, reading comprehension, and arithmetic reasoning. Their study found that when both academic aptitude and academic achievement (measured by high school test scores of English, social studies, science, and mathematics) were

used to predict educational attainment (e.g., college attendance), achievement has stronger effect than aptitude. The lack of academic aptitude variable is a limitation of this dissertation study.

Third, the mean age of students in this sample is another limitation. When the second follow-up survey was conducted in 2006, many of these students were enrolled in their second year of college. Some of the students who were not enrolled in college at the time of the follow-up survey may have attended college years later or may have begun attending college but stopped and dropped-out or started again later. Swail et al. (2004) found about 19 percent of all college students nationwide delayed their enrollment in post-secondary institutions after high school. Thus, the percentage of students attending college may increase over time, a result not captured in this study.

Fourth, even though this study used rich longitudinal data from a nationally representative sample, the ELS:2002 data were initially collected from tenth graders, and the study sample included only students who completed all three surveys from baseline to second follow-up. Thus, students who were not in high school in 2002, including home-schooled students and students who dropped out of school were excluded.[16]

[16] When the first follow-up data was collected in 2004, 24 percent of Hispanic students,12 percent of African American students, and seven percent of white students dropped out of high schools (National Center for Education Statistics, 2007). About 10 percent of Hispanic high school dropouts, 20 percent of African American dropouts, and 30 percent of white dropouts went on to earn a GED (Pew Hispanic Research, 2010). However, GED holders among young adults (25-29 years old) were less likely to earn some type of college degree (National Longitudinal Survey, 2009).

Finally, according to the most recently available data reported by the U.S. Census 2010, 80 percent of the foreign-born people in the U.S. were born in either Latin America (54 percent) or Asia (27 percent). Considering foreign-born parents may lack language skills and information about American educational and financial aid systems, immigrant status could be a significant predictor of college attendance, one that is not controlled for in this study. For example, Pew Research Center (2009) reported that foreign-born Hispanic children show far lower college enrollment rates when compared to their U.S.-born counterparts. The lack of consideration regarding immigrant status is another limitation of this study. For a more comprehensive study about the role of college savings on educational outcomes, looking at the differences by immigration status is a needed next step in a research agenda addressing college attendance among children from families with low-incomes.

Yet, despite these limitations, findings from this dissertation study have important implications for social work policy and practice.

5.3 IMPLICATIONS FOR SOCIAL WORK POLICY AND PRACTICE

5.3.1 Asset-building Approach: College Savings Programs

Findings of this study support the idea that parents' college savings are positively associated with parent-child discussions about attending college, parents' expectations for their children to attend college, and two-year college attendance among families with low- incomes. Even though the asset-building approach is not the only way to improve educational outcomes, these findings suggest that college savings could be an effective way to help students from families with low-incomes begin their post-secondary education by motivating them to talk about attending college with their parents and by empowering them to have a sense they may be able to reach their desired educational goals. That is, college savings programs could be a promising

strategy to provide psychological and social advantages as well as to improve college attendance among students from families with low-incomes. Campbell (2004), vice president of the Ford Foundation, said, "the asset-building program aims to reduce poverty and injustice by helping low-income people and communities build assets that give them the independence necessary to resist oppression, pursue productive livelihoods, and confront injustice" (p.3). Loke and Sherraden (2008) also state, "(a)sset-based policies are primarily about development, about enhancing opportunities and capabilities of people, empowering individuals and families to be in control of their lives, and enabling greater contribution to society and the economy" (p.8).

Sallie Mae's survey (2014) indicates that almost half of parents surveyed did not start college savings in 2013, despite their great desire and need for college savings. In addition, between 2010 and 2013, there was a significant decline both in terms of the number of families who save and the amount they save for children's future education. Sallie Mae reported that the great economic recession (2007-2009) had a negative "impact on the number of families saving and the amounts they were able to save" (p.8). Not surprisingly, not saving for college is more common in low-income households. For example, in 2013, 73 percent of households earning $100,000 or more set aside money for their children's college education, and 51 percent of households earning between $35,000 and $100,000 did so. However, only 34 percent of household earning less than $35,000 had college savings for their children (Sallie Mae, 2014). The same study shows that the percentages of college savings by ethnicity are similar. Fifty (50) percent of both white and African American parents had college savings as did 48 percent of Hispanic parents. These results indicate that income levels rather than ethnicity have direct impact on college savings levels. The results of this dissertation study support the overall low rates of college savings (24 percent) in families with low-incomes despite ethnicity.

Even among households with low-incomes in which money has been saved for college, spending saved-money for other purposes and the amount of money saved in college savings accounts have been discussed earlier as possible reasons for the statistically non-significant effect of college savings on children's college expectations and four-year college attendance. Research conducted by the Sallie Mae (2014) reported that low-income parents tended to save for college through general checking/saving accounts while parents with high-incomes more often used dedicated college savings vehicles, such as 529 savings plans.[17] General checking/ savings accounts do not offer institutional supports and financial education that may have a positive influence on saving behaviors as well as the amount of contributions (Clancy et al., 2006; Han & Sherraden, 2007). Thus, even though low-income parents initiate college savings for their children, accumulating enough money for four-year college tuition and fees may not be easy without certain institutional supports.

In order to help low-income families accumulate their own financial resources more effectively, a structured college savings program, called Child Development Accounts (CDAs), have been proposed. The CDAs provide several institutional devices, such as matching grants, initial cash deposit, and withdrawal restrictions, which may help families save minimally sufficient amounts of money for their children's future education. A number of legislative proposals based on the CDA intervention have been proposed, such as America Saving for

[17] The 529 is a tax-advantaged investment programs to save up for future college expenses. Anyone can open 529 plan accounts. However, since the structure of 529 plans is associated with the federal tax incentives, 529 incentives do not benefit the low-income families who need them the most (Clancy et al., 2006). If earnings from 529 are not used for post-secondary education, people need to pay federal income tax as well as a 10% penalty tax.

Personal Investment, Retirement, and Education (ASPIRE) Act, Young Savers Accounts, 401Kids Accounts, Baby Bonds, and Portable Lifelong Universal Savings Accounts (Cramer, 2010). Yet, none of these policy proposals has yet been adopted at the national level. The efforts to provide college savings programs, especially for families with low-incomes need to be continued. For example, in 2010, the City of San Francisco launched a universal CDA type college savings program, called Kindergarten to College (K2C). This program is the first publicly funded college savings program in the United States and operated by the City and County of San Francisco, in partnership with the San Francisco Unified School District (SFUSD). All kindergartners entering SFUSD public schools automatically receive a savings account with an initial deposit of $50. Several financial incentives are also provided, such as 1:1 matching fund, $100 save steady incentives, and $50 for students who qualify for the National School Lunch program.

The Role of Social Work Practitioners in Asset-building

Given the importance of savings for college, perhaps this should be viewed as a "social need" rather than an individual "choice"; lack of savings for college is a social problem given the pivotal role of academic achievement in socioeconomic status over the course of one's lifetime. Bearing in mind the potential benefits of college savings for educational outcomes, policies that facilitate college savings programs are needed, particularly for families with low-incomes. The opportunity to save for college should be available to all children. To make this possible, social workers can play a pivotal role in advocating for the development of progressive and inclusive college savings programs, such as CDAs, which can increase the probability of attending college (Lewis, Elliott, Cramer, & Black, 2014). Furthermore, social workers, in a broad perspective, should focus on improving the financial capability of individuals, families, and communities.

Even though social workers are required to have the necessary knowledge and skills to take-on this role, studies point out that "social workers often receive little preparation for practice that promotes financial capability during their professional education" (Birkenmaier, Kennedy, Kunz, Sander, & Horwitz, 2013). The Financial Social Work Initiative from the University of Maryland, School of Social Work and the Center for Social Development (CSD) from the George Warren Brown School of Social Work recently proposed providing courses for social work students that would teach them how to integrate financial training into social work practice. In so doing, social workers would be able to help their low-income clients more effectively. For example, if college savings programs similar to those implemented in San Francisco were available, school social workers as well as social workers in community-based organizations could help their clients/consumers become program participants, maximizing the advantages potentially available from these programs. According to the Educational Policy and Accreditation Standards (EPAS) of the Council of Social Work Education, "the purpose of social work is actualized through its quest for social and economic justice" (CSWE, 2015, p.5). Thus, understanding asset-building policies has the potential to improve social work client's/consumer's financial capabilities in line with the mission of social work profession.

5.2.2 Encouraging Parent-Child Discussions about Attending College

The barriers to higher education for students from households with low-incomes are not limited to their lack of financial resources. Many non-financial barriers also prevent them from achieving their desired educational goals. For example, a noteworthy contribution of this dissertation is the finding that reveals the importance of parents' discussions with their children about attending college. Given this, developing programs and policies that encourage helpful

parent-child discussions about college plans and provide adequate information about attending college are paramount.

Hence, programs designed to motivate discussions about attending college can be more effective if college savings programs are provided concurrently. At the same time, college savings policies and programs will be more effective if they are combined with strategies for motivating parents and their children's interactive conversations about attending college. Oyserman (2012) has suggested that parents' college savings may serve as a positive cue for them to make educational goals feel closer, which allows parents to be involved in their children's college preparations, including discussions.

As Pong et al. (2005) argued, the *contents* of parent-child discussions should directly link to college in order for them to be beneficial to children's educational success. Findings of this dissertation study support the significant influence of college discussions on educational expectations and real college enrollment among families with low-incomes. The extent to which parents and children have appropriate and accurate information about college may determine the quality of these discussions. If parents and children have more knowledge about how to prepare for college both academically and financially, conversations could be focused on types of college, size, location, and financial aid that would encourage a successful choice for students. However, studies point out that high school parents and students with low-incomes appear to lack sufficient information about existing financial aid and have very little understanding about actual college costs (Ceja, 2006; Grodsky & Jones, 2004; Kane & Avery, 2004; Perna & Steele, 2011). For example, many low-income families estimate college costs as being three times more expensive than they actually are (American Council of Education Survey, 2004). A poll commissioned by the Sallie Mae (2003) found that two-thirds of all parents and students planning to go to college

did not name grants as a possible source of funds when asked about types of financial aid. Inaccurate or insufficient information could negatively affect parents' discussions with their children about attending college as well as their children's expectations for attending college. Thus, developing services/programs that provide accurate information about the college preparation process, financial aid, school choice, and college costs are necessary.

The Role of Social Work Practitioners in Encouraging Parent-Child Discussions about College Plans

The findings of this dissertation support the crucial role of high school counselors, suggesting students from low-income families who met with their school counselors for college information are over two times more likely to attend a two-year or four-year college than students who never met with their school counselors. Social workers in school settings working with families must also pay special attention to these parents and children to provide more accurate information about college applications, financial aid, important deadlines, and more. Yet, their role is not simply limited to providing information. First, as an educator, social workers are expected to teach people how to develop particular skills and knowledge, such as financial education (e.g., available financial aid, importance of college savings, various vehicles to save money for college) and parent education (e.g., how to talk with their children about their future without pressuring them). Second, as a broker, social workers are expected to be involved in the process of making referrals to link students and families to needed resources and information. Moreover, following-up to be sure the needed resources and information are successfully obtained is another important role of social workers (CSWE, 2015). For example, Myers and Myers (2012) found that children's engagement in college preparation activities affect parent-child communications about attending college thus increasing access to college. The

positive effect of participating in college preparation programs on college attendance among students from low-income families was found in this dissertation study, but only 23 percent of children from families with low-incomes participated in these programs. Thus, encouraging students to participate in these programs is also a task of social workers. Further, connecting students to community-based free tutoring programs could be another example role of social workers as a broker. [18]

Existing literature identified parents with low-incomes as being less likely to communicate or interact with their children when compared to parents with high incomes (Bradley & Corwyn, 2002; Elder, Vannguyen, & Caspi, 1985; Smetana, Crean, & Daddis, 2002). Thus, social workers should seek strategies to encourage low-income families to have productive discussions about the future educational plans.

5.2.3 Enhancing College Expectations

By supporting the major assumption of the Wisconsin Model (Sewell, Haller, and Portes, 1969), this study found that parents who possess expectations that their children will attend college are more likely to talk with their children about college (their expectations also affecting their children's expectations and college attendance). According to the National Center for Education Statistics (2012), even though almost all parents (92 percent) hope their children will pursue higher education, their expectations are formed through their own experiences. The Child

[18] Under the No Child Left Behind Act, Club Z! provides FREE one-on-one in-home tutoring, or small group tutoring lessons at locations such as libraries, community centers, churches, schools, or other convenient sites. However, less than 15% of eligible students participated in the programs, according to the U.S. Department of Education (recited GreatSchools, 2015)

Trends Data Bank (2012) reported that 98 percent of parents with high-incomes (more than $75,000) and 88 percent of parents with moderate-incomes ($25,000 - $50,000) expected their children to attend college, while 80 percent of parents with low-incomes ($25,000 or less) expected their children to go to a college. The same study reported that African American and Hispanic parents' college expectations (85 percent) were 10 percent lower than those of white or Asian parents (95 percent). By analyzing a randomly selected sample of 2,572 parents, Kim, Sherraden, and Clancy's study (2013) consistently found that ethnic minority parents have a significantly lower level of college expectations than their white counterparts. Given that, enhancing parental expectations for their children's college education is a vital task of improving college access.

The Role of Social Work Practitioners in Enhancing College Expectations

By analyzing the National Household Education Survey data, Child Trends (2012) reported that parents' expectations for their children are conditioned in part by the number of activities they share with their children. That is, the more activities parents and children engage-in together, the higher educational expectations parents have for their children. These shared activities include, visiting a library together, attending a concert, going to a zoo, and so on. As this dissertation study finds, having time to talk about college plans with children, or bringing children to banks or making a deposit together for college could be a good activity. Organizing these various activities within schools or community settings are ways social workers may help parents improve college expectations for their children. For example, a nonprofit organization, the Los Angeles Educational Partnership (LAEP) provides long-term family care program to help parents be involved in their children's education. This organization provides parent education programs to teach parents how to communicate with their children and how to create

an environment where children can learn. The LAEP also emphasizes preparing students and their parents for college and encourages them to have aspirations for attending college, keeping in touch with families as their children progress through school, until the time student's graduate from high school. In short, developing services/programs to increase or maintain college expectations and assisting people to access those services and to facilitate this throughout the child's primary and secondary education is a social work task with outcomes that include enhancing expectations for attending college.

5.4 IMPLICATIONS FOR FUTURE RESEARCH

In order to test the effect of college savings, this dissertation study includes only the likelihood of attending two-year or four-year college as a key outcome variable. Further study should examine the impact of college savings on other educational outcomes, such as immediate transition to college after high school, total years of completed schooling, likelihood of dropping-out of college, and college graduation. Many parents with low-incomes believe that attending community college for two years then transferring to a four-year college is the best strategy for reducing the cost of college (College Savings Foundation, 2014). Thus, identifying the potential effect of college savings on moving from a two-year college setting to a four-year college setting is another research question. Recently, the third follow-up survey data of ELS:2002 was released, including information about the continued college-going experience. This dissertation study should be extended to follow the path of college experiences among the current survey students.

I discussed that the non-significant impact of college savings on four-year college attendance may be attributed to the insufficient money having accumulated in the college savings accounts, which may also impact children's expectations for attending college. However, this

dissertation study did not include the amount of money parents' saved in college savings accounts. Hence, this is another line of inquiry for future research. Included in this analysis would be attention paid to identifying what portion of the money that was being saved for college was actually used for other purposes and how this affected expectations for attending college as well as actual college attendance.

Nearly all asset research tends to pay more attention to the educational gaps between white and African American students. Martinez (2001) criticized the exclusive white/black concept asserting researchers should move beyond this. In this line, future asset research should pay more attention to other ethnic minority groups. For instance, Hispanics are the largest and youngest minority group and still understudied in this area. The increasing number of young Hispanics may play a pivotal role in the future labor market, and well-educated Hispanics can enhance their productive capacity (Tienda, 2009). Given that, the role of holding assets, such as college savings, in improving Hispanic students' educational attainment should not be overlooked. Furthermore, both Hispanic and Asian ethnic groups have great variation in terms of countries of origin, immigrant status, and ethnic identification. Thus, future research should pay close attention to within-group differences.

Finally, this dissertation found a significant association between college savings and parent-child discussions about attending college, as well as the role of college discussions in enhancing children's expectations and ultimate college attendance. Additional research using mixed methods is suggested in order to gain more insight into (1) what aspects of college savings affect the discussions, and (2) what contents of conversation result in the positive influences. For example, since quantitative secondary data, such as ELS:2002 do not include information about the contents of discussions between parents and their children or parental attitudes and tone of

voice when talking with their children about attending college, qualitative research approaches including both children and their parents would be more fruitful. Also, I am curious whether parents who have college savings for their children are more likely to discuss financial planning for college with their children.

5.5 CONCLUSION

"Equal educational opportunity continues to be an elusive goal as indicated by discrepancies in standardized measures of achievement, graduation rates, and the percentage of students attending college across population subgroups" (NASW, 2012, p.4).

College education is important in American society since it is pivotal to lifetime economic self-sufficiency. However, given the combination of high college costs and lack of financial resources, college attendance rates among children from families with low-incomes continue to lag behind those of their higher-income counterparts. Ethnic minority students are also less likely to attend either a two-year or four-year college than their white or Asian counterparts. Given these circumstances, promoting equal educational opportunity and removing financial and psychosocial barriers to learning are key tasks of social work policy and practice.

Based on the Wisconsin Model of status attainment, an ample number of studies have demonstrated the significant role of parents' socioeconomic status and expectations for their children's educational outcomes, including college attendance. Yet, the potential impact of college savings, especially among students from low-income backgrounds, has not yet been fully explored. By addressing existing gaps in this literature, this dissertation study found that parents' college savings may increase the probability of attending a college among students from families with low-incomes through multiple paths, by enhancing parents' college expectations and encouraging parent-child discussions about college. This dissertation study also sheds light on

the significant role of parent-child discussions about attending college in improving children's expectations for ultimately attending two-year or four-year college. Through conversation, it appears parents may share their own experiences and relevant information, thus transmitting their expectations to their children that they attend college. This dissertation study also found parents who have college savings for their children are more likely to discuss college-related issues with their children. In this context, I discussed the pivotal role of school social workers in helping students and parents obtain accurate and sufficient information about college and encouraging proactive parent-child discussions about the costs and logistics of attending college. Despite the importance of college savings, minority families from low-income backgrounds are more likely to experience barriers to accumulating financial assets thus impacting their children's educational attainment.

In order to make higher education more affordable and accessible to all students regardless of their family's socioeconomic status or ethnicity, progressive college savings programs, such as Child Development Accounts (CDAs), may provide incentives to those from families with low-incomes a promising approach to affording college. The overall findings of this dissertation study provide additional justification for the development of nation-wide asset-building social policies, especially for students from families with low-incomes. As the findings of this study suggest, college attendance is associated with not only financial matters, but also psychological and social aspects (e.g., college expectations and parent-child discussions about attending college). Thus, to fulfill the equal educational opportunity, mutual efforts to develop effective financial, psychological, and social interventions between members of the social work profession, educators, and community organizations are required.

REFERENCES

Advisory Committee on Student Financial Assistance (ACSFA). (2006). *Mortgaging our future: How financial barriers to college undercut America's global competitiveness*. Washington, DC: Advisory Committee on Student Financial Assistance.

ACSFA. (2010). *The rising price of inequlality: How inadequate grant aid limits college access and persistence.* Retrevied from http://chronicle.com/items/biz/pdf/acsfa_rpi.pdf

ACSFA. (2012). *Pathways to success: Integrating learning with life and work to increase national college completion* (A report to the U.S. Congress and Secretary of Education). Washington, DC: Advisory Committee on Student Financial Assistance.

Allison, P. (2012). Why you probably need more imputations than you think. Statistical Horizons. Retrevied from http://statisticalhorizons.com/more-imputations

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Baum, S., Ma, J., & Payea, K. (2013). *Education pays 2013: The benefits of higher education for individuals and society*. CollegeBoard. Retrieved from https://trends.collegeboard.org/sites/default/files/education-pays-2013-full-report.pdf

Bell, J. D. (2008). *Higher education and economic development*. National Conference of State Legislatures (NCSL) and the Western Interstate Commission for Higher Education (WICHE). http://www.wiche.edu/info/gwypf/bell_economicDevelopment.pdf

Birkenmaier, J., Kennedy, T., Kunz, J., Sander, R., & Horwitz, S. (2013). The role of social work in financial capability: Shaping curricular approaches. In J. Birkenmaier, M. Sherraden, & J. Curley (Eds.), *Financial capability and asset development: research, education,*

policy, and practice (pp. 278-301). New York, NY: Oxford University Press.

Blau, P. M., & Duncan, O. D. (1967). The American occupational structure.

Borman, G. D., & Rachuba, L. T. (2001). *Academic success among poor and minority students: An analysis of competing models of school effects.* Baltimore, MD: Johns Hopkins University.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53*, 371-399.

Bryan, J., Holcomb-McCoy, C., Moore-Thomas, C., & Day-Vines, N. (2009). Who sees the school counselor for college information? A national study. Professional School Counseling, 12(4), 280-291.

Bureau of Labor Statistics. (2014). Household data annual averages: table 3 employment status of the civilian noninstitutional population by age, sex, and race. Retrevied from http://www.bls.gov/cps/cpsa2013.pdf

Bureau of Labor Statistics. (2015a). Earnings and unemployment rates by educational attainment. Retrieved from http://www.bls.gov/emp/ep_chart_001.htm

Bureau of Labor Statistics. (2015b). Employment 2012 and projected 2022, by typical entry-level education and training assignment. Retrieved from http://www.bls.gov/emp/ep_table_education_summary.htm

Bradburn, E. M., Hurst, D. G., & Peng, S. (2001). Community college transfer rates to 4-year institutions using alternative definitions of transfer. National Center for Education Statistics. Retreived from http://nces.ed.gov/pubs2001/2001197.pdf

Bryan, J., Moore, T., C., Day-Vines, N. L., & Holcomb-McCoy, C. (2011). School counselors as social capital: The effects of high school college counseling on college application rates. Journal of Counseling & Development, 89(2), 190-199.

Burd-Sharps, S., Elder, J., Lewis, K., & Martins, E. (2009). *Goals for the common good: Exploring the impact of education*. Measure of America & United Way.

Burgard, S., & Stewart, J. (2003). Social environment notebook: Occupational status. Retrived from http://www.macses.ucsf.edu/research/socialenviron/occupation.php

Caspi, A, Wright, B., Moffitt, T., & Silva, P. (1998). Early failure in the labor market: Childhood and adolescent predictors of unemployment in the transition to adulthood. *American Sociological Review, 63,* 424-251.

Ceja, M. (2006). Understanding the role of parents and siblings as information sources in the college choice process of Chicana students. *Journal of College Student Development, 47*(1), 87-104.

Charles, C. Z., Roscigno, V. J., & Torres, K. C. (2007). Racial inequality and college attendance: The mediating role of parental investments. *Social Science Research, 36*(1), 329-352.

Cheatham, G. A., & Elliott III, W. (2013). The effects of college savings on postsecondary school enrollment rates of students with disabilities. *Economics of Education Review, 33,* 95-111.

Cheng, S., & Starks, B. (2002). Racial differences in the effects of significant others on student's educational expectations. *Sociology of Education, 75*, 306-327.

Clancy, M., Han, C., Mason, L. R., & Sherraden, M. (2006). Inclusion in college savings plans: Participation and saving in Maine's matching grant program (CSD Research Report 06-03). St. Louis, MO: Washington University, Center for Social Development.

College Board. (2012). Trends in College Pricing. http://trends.collegeboard.org/college-pricing

College Board. (2013). Trends in Student Aid, 2013. Retrevied from https://trends.collegeboard.org/sites/default/files/student-aid-2013-full-report.pdf

College Board. (2014). Trends in College Pricing 2014. Retrevied from https://secure-media.collegeboard.org/digitalServices/misc/trends/2014-trends-college-pricing-report-final.pdf

College Savings Foundation. (2010). Parents shift behavior to save more for their children's college education. Retrieved from http://www.collegesavingsfoundation.org/pdf/CollegeSurvey10V3-1.pdf

College Savings Foundation. (2014). Young parents jump on savings bandwagon: 8th annual state of college savings survey. Retrieved from http://www.collegesavingsfoundation.org/pdf/ExecutiveSummaryCSF2014-15StateofCollegeSavings.pdf

Conley, D. (2001). Capital for college: Parental assets and postsecondary schooling. *Sociology of Education*, 59-72.

Cooper, H., Robinson, J. C., & Patall, E. A. (2006). Does homework improve academic achievement? A synthesis of Research 1987-2003. *Review of Educational Research, 76*(1), 1-62.

Council on Social Work Education (CSWE). (2015). Educational policy and accreditation standards. Retrevied from http://www.cswe.org/File.aspx?id=81660

Cramer, R. (2010). The big lift: Federal policy efforts to create Child Development Accounts. *Children and Youth Services Review, 32*(11), 1538-1543.

Davis-Kean, P. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. J*ournal of Family Psychology, 19(*2), 294-304.

Destin, M., & Oyserman, D. (2009). From assets to school outcomes: How finances shape children's perceived possibilities and intentions. *Association for Psychological Science, 20*, 414-418.

Destin, M., & Oyserman, D. (2010). Incentivizing education: Seeing schoolwork as an investment, not a chore. *Journal of experimental social psychology*, *46*(5), 846-849.

Elder, G. H., Vannguyen, T., & Caspi, A. (1985). Linking family hardship to childrens lives. *Child Development, 56,* 361–375

Elliott III, W., & Beverly, S. G. (2011a). The Role of Savings and Wealth in Reducing 'Wilt'between Expectations and College Attendance. *Journal of Children and Poverty, 17*(2), 165-185.

Elliott, W., & Beverly, S. (2011b). Staying on course: The effects of savings and assets on the college progress of young adults. *American Journal of Education, 117*(3), 343-374.

Elliott, W., Choi, E. H., Destin, M., & Kim, K. H. (2011). The age old question, which comes first? A simultaneous test of children's savings and children's college-bound identity. *Children and Youth Services Review, 33*(7), 1101-1111.

Elliott, W., Constance-Huggins, M., & Song, H. (2012). Improving college progress among low-to moderate-income (LMI) young adults: The role of assets. *Journal of Family and Economic Issues*, 1-18.

Elliott, W., & Sherraden, M. S. (2013). Institutional efficacy and CSA effects. In W. Elliott (Ed.). Building expectations, delivering results: Asset-based financial aid and the future of

higher education . Lawrence, KS. Retrieved from http:// save4ed.com/wp-content/uploads/2013/07/ Biannual-Report_Building-Expectations-071013.pdf

Elliott, W., & Song, H. (under review). When effort and ability are not enough to reduce the college enrollment gap, does college savings help? Journal of Socio-economics.

Entwisle, D., Alexander, K., Pallas, A., & Cadigan, D. (1988). A social psychological model of the schooling process over first grade. *Social Psychology Quarterly, 51*, 173- 189.

Entwisle, D. R., Alexander, K. L., & Olson, L. S. (2005). First grade and educational attainment by age 22: A new story 1. *American Journal of Sociology, 110*, 1458–1502.

Erickson, F. (1987). Transformation and school success: The politics and culture of educational achievement. *Anthropology & Education Quarterly, 18*(4), 335-356.

Ficklen, E., & Stone, J. (2002). Empty promises: The myth of college access in America. A Report of the Advisory Committee on Student Financial Assistance.

Field, A. P. (2009). *Discovering statistics using IBM SPSS Statistics* (Third edition). London: Sage publications.

Fritz, M., & MacKinnon, D. P. (2007). Power to detect the mediated effect. *Psychological Science, 18*, 233–239.

Ganderton, P. T., & Santos, R. (1995). Hispanic college attendance and completion: Evidence from the high school and beyond surveys. *Economics of Education Review, 14,* 35–46. doi:10.1016/0272- 7757(94)000344

George-Jackson, C. & Gast, M. J. (2015). Addressing information gpas: Dispariteis in financial awrenss and preparedness on the road to college. *Journal of Student Financial Aid, 44*(3), 200-234.

Goldenberg, C., Gallimore, R., Reese, L., & Garnier, H. (2001). Cause or effect? A longitudinal study of immigrant Latino parents' aspirations and expectations, and their children's school performance. *American Educational Research Journal, 38*(3), 547-582.

Graham, J. W., Olchowski, A, E. & Gilreath, T. D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Sicence, 8*, 206-213.

Grimes, D. A., Kenneth, F. S. (2008). Making sense of odds and odds ratios. *Obstetrics & Gynecology, 111(2),* 423-426. Retrevied from http://meds.queensu.ca/medicine/obgyn/pdf/Making.Sense.of.Odds.pdf

Grinstein-Weiss, M., Sherraden, M., Gale, W., Rohe, W. M., Schreiner, M., & Key, C. (2012). Effects of an Individual Development Account program on retirement saving: Follow-up evidence from a randomized experiment (CSD Working Paper 12-54). St. Louis, MO: Washington University, Center for Social Development.

Grodsky, E., & Jones, M. (2004). R*eal and imagined barriers to college entry: Perceptions of cost*. Paper presented at the annual meeting of the American Education Research Association: San Diego, CA.

Han, C., & Sherraden, M. (2007). Do institutions really matter for saving among low-income households? A comparative approach. (Working Paper). St. Louis, MO: Washington University, Center for Social Development.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium.*Communication Monographs, 76(4),* 408-420.

Haveman, R., & Wolff, E. N. (2000). Who are the asset-poor?: Levels, trends and composition, 1983-1998. Center for Social Development Discussion Paper 1227-01. St. Louis, MO:

Washington University.

Heller, D. E. (2001). Trends in the affordability of public colleges and universities: The contradiction of increasing prices and increasing enrollment. *The states and public higher education policy: Affordability, access, and accountability*, 11-38.

Hernandez, D. J. (2004). Demographic change and the life circumstances of immigrant families. *The Future of Children*, 17-47.

Hill, M., & Duncan, G. J. (1987). Parental family income and the socioeconomic attainment of children. *Social Science Research, 16*, 39-73.

Holland, P.W. (1986). Statistics and causal iInference. *Journal of the American Statistical Association, 8*(81), 945-960.

Hossler, D., & Gallagher, K. S. (1987). Studying student college choice: A three-phase model and the implications for policymakers. *College and University, 62*(3), 207-221.

Hoxby, C. M. & Avery, C. (2012). The Missing "one-offs": The hidden supply of high-achieving, low income students. (Working Paper No. 18586). Retrieved from National Bureau of Economic Research website http://www.nber.org/papers/w18586

Huang, J., Guo, B., Kim, Y., & Sherraden, M. (2010). Parental income, assets, borrowing constraints and children's post-secondary education. *Children and Youth Services Review, 32*(4), 585-594.

Institute for Higher Education Policy. (2010). *A portrait of low-income young adults in education*. Retrieved from http://www.ihep.org/sites/default/files/uploads/docs/pubs/brief_a_portrait_of_low-income_young_adults_in_education.pdf

Jacob, B. A., & Wilder, T. (2010). Educational expectations and attainment: National Bureau of Economic Research.

Jencks, C., Crouse, J., & Mueser, P. (1983). The Wisconsin model of status attainment: A national replication with improved measures of ability and aspiration. *Sociology of Education*, 3-19.

Jha, K. Sinha, N., Arkatkar, S. S., & Sarkar, A. K. (2013). Modeling growth trend and forecasting techniques for vehicular population in India. *Interational journal for Traffic and Transport Engineering, 3*(2), 139-158.

Johnson, J., Duffett, A., & Ott, A. (2005). Life after high school: Young people talk about their hopes and prospects. Public Agenda. http://files.eric.ed.gov/fulltext/ED485309.pdf

Judd, C. M., & Kenny, D. A. (1981). Process analysis: Estimating mediation in treatment evaluations. Evaluation Review, 5, 602-619.

Kahl, J. A. (1953). *Educational and Occupational Aspirations of Common Man Boys*: Bobbs-Merrill, College Division.

Kane, T. J. & Rouse, C.E. (1995). Labor market returns to two- and four-year college. *American Economic Review,85*(3), 600-614.

Kenny, D. A. (2013). Mediation. http://davidakenny.net/cm/mediate.htm

Avery, C., & Kane, T. J. (2004). Student perceptions of college opportunities: The Boston COACH Program, Caroline Hoxby (ed.) *College decisions: The new economics of choosing, attending and completing college*. Chicago: University of Chicago Press.

Kim, K. N. (2012). Formation of Educational Expectations of Lower Socioeconomic Status Children. *Education and Urban Society*.

Kim, D., & Schneider, B. (2005). Social capital in action: Alignment of parental support in

adolescents' transition to postsecondary education. Social Forces, 84(2), 1181-1206.

Kim, T. K. (2009). *Ucan-Regression*. Seoul: Human and Welfare.

Kim, Y., & Sherraden, M. (2011). Do parental assets matter for children's educational attainment?: Evidence from mediation tests. *Children and Youth Services Review, 33*(6), 969-979.

Kim, Y., Huang, J., Sherraden, M. , & Clancy, M. (2013). Impacts of Child Development Accounts on mother's educational expectations and children's social-emotional development. Paper presentation at APPAM research conference.

Lerman, R., & McKernan, S.-M. (2008). Benefits and consequences of holding assets. *Asset Building and Low-Income Families*, 175-206.

Lewis, M., Elliott, E., Cramer, R., and Black, R. (2013). Policy discussion. In the biannual report on the assets and education field. http://save4ed.com/repchapter-6/

Little, R.J.A. & Rubin, D.B. (1987). *Statistical Analysis with Missing Data*. J. Wiley & Sons, New York.

Loke, V., & Sherraden, M. (2008). Building assets from birth: A global comparison of Child Development Account policies. *International Journal of Social Welfare 18*, 119–29.

Long, B. T. (2008). What is known about the impact of financial aid? Implications for policy. National Center for Postsecondary Reserch. Retrevied from http://www.postsecondaryresearch.org/i/a/document/6963_LongFinAid.pdf

Lynch, M., Engle, J., & Cruz, J. L. (2011). Priced out: How the Wrong Financial-Aid Policies Hurt Low-Income Students. *Education Trust*.

McLanahan, S. (2004). Diverging destinies: How children are faring in the second demographic transition. *Demography, 41*(4), 607-627.

Markus, H., & Nurius, P. (1986). Possible selves. *American psychologist, 41*(9), 954-969.

Martinez, E. (2001). Seeing more than black and white: Latinos, racism, and the cultural divide. In M. L. Anderson & P. H. Collins (Eds.), *Race, class, and gender: An anthology* (2nd ed., pp. 108–114). Stamford, CT: Wadsworth.

McDonough, P. M. (1997). C*hoosing Colleges. How Social Class and Schools Structure Opportunity*. Albany, New York: State University of New York Press.

McDonough, P. M. (2005). Counseling and college counseling in America's high schools. State of college admission, 107-121.

Menard, S. (1995). *Applied logistic regression analysis: Sage university series on quantitative applications in the social sciences.* Thousand Oaks, CA: Sage

Mischel, L., Bernstein, J., & Allegretto, S. (2007). *The State of Working America*. Washington, D.C.: Economic Policy Institute.

Moore, A., Beverly, S., Schreiner, M., Sherraden, M., Lombe, M., Cho, E. Y., . . . Vonderlack, R. (2001). Saving, IDA programs, and effects of IDAs: A survey of participants: EconWPA.

Morgan, S. L. (2004). Five models for black -white differences in the causal effect of expectations on attainment. *Sociological methods & research, 33*(1), 3-53.

Myers, S. M., & Myers, C. B. (2012). Are Discussions about College between Parents and Their High School Children a College-Planning Activity? Making the Case and Testing the Predictors. *American Journal of Education, 118*(3), 281-308.

Nam, Y., Huang, J., & Sherraden, M. (2008). Asset definitions. In S.-M. McKernan & M. Sherraden (Eds.) *Asset building and low-income families* (pp. 1–31). Washington, DC: Urban Institute Press.

National Association of Social Workers (NASW). (2012). NASW Standards for school social work services.

National Center for Education Statistics. (2002). Education Longitudinal Study (ELS), 2002: Base Year (ICPSR4275). Inter-university Consortium for Political and Social Research.

National Center for Education Statistics. (2010). The condition of education 2010. Indicator 22. Educational attainment. U.S. Department of Education.

National Center for Education Statistics. (2011). A study of imputation algorithms. http://nces.ed.gov/pubs2001/200117.pdf

National Center for Education Statistics. (2012). *The condition of education 2012*. Indicator 35: Postsecondary graduation expectations. U.S. Department of Education .

Natriello, G., & McDill, E. L. (1986). Performance standards, student effort on homework, and academic achievement. *Sociology of Education, 59,* 18-31.

Ntiri, D. W. (2001). Access to higher education for nontraditional students and minorities in a technology-focused society. *Urban Education, 36 ,* 129-144.

Center for Social Development. (2013). SEED National Initiative. Retrived from http://csd.wustl.edu/AssetBuilding/SEED/Pages/default.aspx

O'Connor, N., Hammack, F. M., & Scott, M. A. (2010). Social capital, financial knowledge, and Hispanic student college choices. *Research in Higher Education, 51*(3), 195-219.

Ogbu, J. U., & Simons, H. D. (1998). Voluntary and involuntary minorities: a cultural-ecological theory of school performance with some implications for education. *Anthropology & Education Quarterly, 29*(2), 155-188.

Oliver, M.L. & Shapiro, T.M. (1995). *Black wealth/white wealth: New perspective on racial inequality*. New York, NY, Routledge.

Oliver, M. L., & Shapiro, T. M. (2006). *Black wealth/white wealth : A new perspective on racial inequality* (Vol. Tenth-anniversary edition). New York: Routledge.

Oseguera, L. (2012). Postsecondary educational pathways of low-and middle/high-income youth: Using the Education Longitudinal Study (ELS) to examine tenth graders' transitions from high school. Los Angeles, CA: UC/ACCORD.

Oyserman, D. (2012). Not just any path: Implications of identity-based motivation for disparities in school outcomes. *Economics of Education Review*. *33*(0), 179-190.

Oyserman, D., & Destin, M. (2010). Identity-based motivation: Implications for intervention. *The Counseling Psychologist, 38*(7), 1001-1043.

Oyserman, D., Bybee, D. & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology, 91,* 188-204.

Oyserman, D., & Fryberg, S. (2006). The possible selves of diverse adolescents: Content and function across gender, race and national origin. *Possible selves: Theory, research, and applications*, 17-39.

Oyserman, D., Terry, K., & Bybee, D. (2002). A possible selves intervention to enhance school involvement. Journal of adolescence, 25(3), 313-326.

Ozsoy, C. (2008). The Contribution of higher education to economic development. *8th Global Conference on Business & Economics*. Italy: Florence. http://www.academia.edu/773478/The_Contribution_of_Higher_Education_to_Economic_Development

Page-Adams, D., & Sherraden, M. (1997). Asset building as a community revitalization strategy. *Social Work, 42(5*), 423-434.

Page-Adams, D. & Vosler, N. (1996). Predictors of depression among workers at the time of a plant closing. *Journal of Sociology and Social Welfare, 23, (4),* 25-42.

Rosenbaum, P. R. (2004). The case-only odds ratio as a causal parameter, *Biometrics, 60,* 233-240.

Perna, L. W., & Titus, M. A. (2005). The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *The Journal of Higher Education, 76*(5), 485-518.

Perna, L. W., & Steele, P. (2011). The role of context in understanding the contributions of financial aid to college opportunity. T*eachers College Record, 113*, 895–933.

Pew Research Center (2009). Rising school enrollment. Retrived from http://www.pewhispanic.org/2009/10/07/iv-rising-school-enrollment/

Pew Hispanic Center (2009). Education: The gap between expectations and achievement. http://pewhispanic.org/files/reports/117.6.pdf

Pew Research Center (2012). Hispanic student enrollments reach new highs in 2011. http://www.pewhispanic.org/files/2012/08/Hispanic-Student-Enrollments-Reach-New-Highs-in-2011_FINAL.pdf

Plank, S. B., & Jordan, W. J. (2001). Effects of information, guidance, and actions on postsecondary destinations: A study of talent loss. *American educational research Journal, 38*(4), 947-979.

Pong, S. l., Hao, L., & Gardner, E. (2005). The roles of parenting styles and social capital in the school performance of immigrant Asian and Hispanic adolescents. *Social Science Quarterly, 86*(4), 928-950.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*, 717-731.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strtegies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891.

Reardon, S. F. (2011). Measures of income segregation. Working Paper. Stanford Center for Education Policy Analysis.

Roksa, J., & Potter, D. (2011). Parenting and academic achievement. *Sociology of Education, 84*(4), 299-321.

Rubin, D. B. (1987). Comment on "the calculation of posterior distributions by data taugmentation" by M. A. Tanner and W. H. Wong, *Journal of the American Statistical Association, 82*(398), 543-546.

Rubin, D. B., & Little, R. J. (2002). *Statistical analysis with missing data*. Hoboken, NJ: J Wiley & Sons.

Sallie Mae & Ipsos. (2013). *How America saves for college 2013*. Retrevied from https://www.salliemae.com/assets/core/how-America-Saves/HowAmericaSaves_Report2013.pdf

Sallie Mae. (2014). How Americ pay for college 2014. Retrevied from http://news.salliemae.com/files/doc_library/file/HowAmericaPaysforCollege2014FNL.pd

Sandefur, G. D., Meier, A. M., & Campbell, M. E. (2006). Family resources, social capital, and college attendance. *Social Science Research, 35*(2), 525-553.

Saunders, J. A., Morrow-Howell, N., Spitznagel, E., Doré, P., Proctor, E. K., & Pescarino, R. (2006). Imputing missing data: A comparison of methods for social work researchers. *Social Work Research, 30*(1), 19-31.

Scanlon, E., & Page-Adams, D. (2001). Effects of asset holding on neighborhoods, families, and children: A review of research. *Building assets*, 25-45.

Schafer, J.L. (1999). Multiple imputation: a primer. *Statistical Methods in Medical Research, 8,* 3-15.

Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological methods, 7*(2), 147.

Schreiner, M., & Sherraden, M. (2007). *Can the poor save? Saving and asset building in individual development accounts*. New Brunswick, NJ: Transaction Publishers.

Sewell, W. H., Haller, A. O., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review*, 82-92.

Sewell, W. H., & Hauser, R. M. (1972). Causes and Consequences of Higher Edueation: Models of the Status Attainment Process. *American Journal of Agricultural Economics, 54*(5), 851-861.

Sewell, W. H., & Hauser, R. M. (1975). Education, Occupation, and Earnings. Achievement in the Early Career.

Sewell, W., & Hauser, R. (1976). Causes and consequences of higher education: Models of the status attainment process. In S. William, R. Hauser, & D. Featherman (Eds.), *Schooling and Achievement in American Society.* NY: Academic Press.

Sewell, W. H., and Hauser. R. M. (1980). The Wisconsin longitudinal study of social and psychological factors in aspirations and achievements. *Research in sociology of education and socialization, 1*, 59-99.

Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*: ME Sharpe Inc.

Sherraden, M. (2005). *Inclusion in the American Dream: Assets, poverty, and public policy*: Oxford University Press, USA.

Sherraden, M. (2009). Savings and educational attainment: The potential of college savings plans to increase educational success. *Washington University, George Warren Brown School of Social Work, Center for Social Development Research & Policy Brief*, 09-29.

Sherraden, M., & Clancy, M. (2008). SEED for Oklahoma Kids: Demonstrating child development accounts for all newborns. *Center for Social Development, Washington University*.

Shobe, M. A., & Boyd, A. S. (2005). Relationships Between Assets and Perceived Economic Strain. *Journal of Community Practice, 13*(2), 21-44.

Smetana, J. G., Crean, H. F., & Daddis, C. (2002). Family processes and problem behaviors in middle-class African American adolescents. *Journal of Research on Adolescence, 12*, 275–304.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological Methodology* (pp. 290-312). Washington DC: American Sociological Association.

Song, H., & Elliott, W. (2012). The effects of parents' college savings on college expectations and Hispanic youth's four-year college attendance. *Children and Youth Services Review, 34*(9), 1845-1852. doi: http://dx.doi.org/10.1016/j.childyouth.2012.05.022

Spera, C. (2005). A review of the relationship among parenting practices, parenting styles, and adolescent school achievement. E*ducational Psychology Review, 17*(2), 125-146.

StatisticsSolutions. (2014). *Assumptions of logistic regression*. Retrieved from http://www.statisticssolutions.com/assumptions-of-logistic-regression/

Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Mahwah, NJ: LEA.

Swail, W. S., Cabrera, A. F., Lee, C., & Center, P. H. (2004). *Latino youth and the pathway to college*: Pew Hispanic Center Washington, DC.

Szumilas, M. (2010). Explaning odds ratios. *Journal of the Canadian Acaemimy of Child and Adolescent Psychiatry, 19(3),* 227-229.

T. Rowe Price. (2015). 7th annual parents, kids, and money survey. Retrevied from https://corporate.troweprice.com/Money-Confident-Kids/images/emk/2015-PKM-Report-2015-FINAL.pdf

Terenzini, P. T., Cabrera, A. F., & Bernal, E. M. (2001). *Swimming against the tide: The poor in American higher education*. Princeton, NJ: College Board.

The Century Foundation. (2012). Graph: Student debt, the trillion dollar threat to the American middle class. Retrevied from http://www.tcf.org/work/education/detail/graph-student-debt-the-trillion-dollar-threat-to-the-american-middle-class

Tienda, M. (2009). Hispanicity and educational inequality: Risks, opportunities, and the nation's future. American Association of Hispanics in Higher Education Tomas Rivera Lecture; 2009.

Trueba, H. T., & Delgado-Gaitan, C. (1988). *School & Society. Learning Content through Culture*: ERIC.

U.S. Census Bureau. (2010). Overview of race and Hispanic origin: 2010. http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf

U.S. Census Bureau. (2012). The foreign-born population in the United States 2010: American community survey reports. https://www.census.gov/prod/2012pubs/acs-19.pdf

U.S. Census Bureau. (2012). The national data book. Education: institutions and enrollment http://www.census.gov/compendia/statab/cats/education.html

Vallima, J. & Hoffman, D. (2008). Knowledge society discourse and higher education. *Higher Education, 56(3),* 265-285.

Wentzel, K. R., Battle, A., Russell, S. L., & Looney, L. B. (2010). Social supports from teachers and peers as predictors of academic and social motivation. *Contemporary Educational Psychology, 35*(3), 193-202. http://dx.doi.org/10.1016/j.cedpsych.2010.03.002

Wildhagen, T. (2009). Why does cultural capital matter for high school academic performance? An empirical assessment of teacher-selection and self-selection mechanisms as explanations of the cultural capital effect. *The Sociological Quarterly, 50*(1), 173-200.

Williams Shanks, T., & Destin, M. (2009). Parental Expectations and Educational Outcomes for Young African American Adults: Do Household Assets Matter? *Race and Social Problems, 1*(1), 27-35. doi: 10.1007/s12552-009-9001-7

Williams, R. (2006). Generalized ordered logit/partial proportional odds models for ordinal dependent variables. *The Stata Journal, 6(1),* 58-82.

Woelfel, J., & Haller, A. O. (1971). Significant others: The self-reflexive act and the attitude formation. A*merican Sociological Review. 36,* 74-87.

Workman, J. , (2011). The effect of sibling size on college funding and attendance. Paper presented at the annual meeting of the American Sociological Association Annual

Meeting, Las Vegas, NV, Retrived from http://citation.allacademic.com/meta/p507980_index.html

Yadama, G. N., & Sherraden, M. (1996). Effects of assets on attitudes and behaviors: Advance test of a social policy proposal. *Social Work Research, 20*(1), 3-11.

Yamamoto, Y.; & Holloway, S. D. (2010). Parental expectations and children's academic performance in sociocultural context. *Educational Psychology Review, 22*(3), 189-214.

Zager, R., Kim, Y., Nam, Y., Clancy, M., & Sherraden, M. (2010). The SEED for Oklahoma Kids Experiment: Initial account opening and savings: CSD Research Report 10–14. St. Louis, MO: Washington University, Center for Social Development.

Zhan, M., & Sherraden, M. (2003). Assets, expectations, and children's educational achievement in female-headed households. *Social Service Review, 77*(2), 191-211.

Zhan, M. (2006). Assets, parental expectations and involvement, and children's educational performance. *Children and Youth Services Review, 28*(8), 961-975. doi: http://dx.doi.org/10.1016/j.childyouth.2005.10.008

Zhan, M., & Sherraden, M. (2011). Assets and liabilities, educational expectations, and children's college degree attainment. *Children and Youth Services Review, 33*(6), 846-854. doi: http://dx.doi.org/10.1016/j.childyouth.2010.12.006

APPENDIX A

Parents' College Savings and Educational Outcomes

Table 1. Parents' College Savings and College Attendance

	Study	Asset Variables	Methods	Outcome	Key Findings
1.	Racial inequality and college attendance: The mediating role of parental investments				
	Charles, Roscigno, & Torres (2007)	Parents' savings for college; Amount of parents' savings for college	*Methods* : Multinomial logistic regression; *Data Set*: National Educational Longitudinal Survey (NELS:88); All ethnic groups (immigrant/ non-immigrant) *Longitudinal*: Baseline measured at 8th grade in 1988 to 12th grade in 1992; Outcome measured at 2 years out of high school in 1994; N = 13,699; *Country of Origin*: U.S *Randomized control*: No	2yr college attendance 4yr college attendance	*Full Sample:* Parental savings for college is a strong predictor of both 2-year and 4-year college attendance; Amount of parental savings for college is a positive, significant predictor of 4-year college attendance but not 2-year college attendance After controlling for parental early investments in child education including college savings, the black-white gap and Hispanic-white gap in the likelihood of college attendance disappear. *Sample by Race:* None *Sample by Income*: None
2.	The effects of parents' college savings on college expectations and Hispanic youth's four-year college attendance				
	Song & Elliott (2012)	Parents' school savings	*Method* : Hierarchical linear modeling(HLM); *Data Set*: Educational Longitudinal Study (ELS):2002; Hispanic only	4yr college enrollment	*Full Sample*: Parental saving is significant; Hispanic youth whose parents have college savings are 1.5 times more likely to attend four-year college than their

			Longitudinal: Baseline measured at ages 17 in 2002; Outcomes measured at ages 21 in 2006; N = 2,273 Country of Origin: U.S Randomized control: No		counterparts without college savings; 33% of parents have savings for their youth's higher education Income is not significant *Sample by Race:* None *Sample by Income*: None
3.	The effects of family college savings on postsecondary school enrollment rates of students with disabilities				
	Cheatham & Elliott (2013)	IV: Parental school savings; Bonds; Stocks; Child investment fund (i.e., mutual fund); Take out a home equity loan; and State college savings plan; MV: students and parents' college expectations	*Method:* Logistic regressions Data sets: Educational Longitudinal Survey (ELS): 2002); Children in special education programs; *Longitudinal:* Baseline measured at ages 17 or 18 in 2002; Outcome measured at ages 21 or older in 2006; N = 756 *Country of Origin*: U.S *Randomized control*: No	Any college attendance 4yr college attendance	First study to examine whether p college savings is positively associated with college enrollment of students in special education programs; *Full Sample*: For both outcome variables, parental savings, a form of *college bonds* in particular, is significant; Income is not significant; *Sample by Race:* None *Sample by Income*: None
4.	Long-term effects of Individual Development Accounts on postsecondary education: Follow-up evidence from a randomized experiment				
	Grinstein-Weiss, Sherraden, Gale, Rohe, Schreiner, and Key (2013)	A structured saving (IDA)	*Methods*: Propensity score weighting; logistic regression; bivariate comparisons *Data Set*: data from the Tulsa IDA experimental program (Baseline & Wave 4) *Longitudinal*: Wave 4 data	College attendance	*Full Sample*: At wave 4, 52% of the treatment group reported enrolling compared to 45% of the control group. The difference is marginally significant (p=.066) *Sample by Race:* None *Sample by Income*: None

			measured after 10 years from the baseline survey; N=824 Country of Origin: U.S Randomized control: Yes		
5.	Social capital, financial knowledge, and Hispanic student college choices				
	O'Connor, Hammack & Scott (2010)	Parents' school savings; this variable is considered as social capital, representing parental knowledge of the importance of saving money for college	*Methods*: Logistic regression; Oaxaca decomposition; *Data Set*: National Educational Longitudinal Survey:1988-2000; Sample restricted to those whose previous academic performance met minimum qualifications for college, and who aspired to complete a bachelor's degree; for logistic regression, White= 4,213, Black=340, Latino=436; for Oaxaca decomposition White=2,421, Latinos=248 *Country of Origin*: U.S *Randomized control*: No	Likelihood of 4yr college attendance compared to 2yr college attendance	*Full sample:* both parents and children's actions to find out financial aids are significant; Parents' school savings when treated as a background difference is not significant; The effects of expected returns on parents' school savings is significant in explaining the gap in college attendance between Whites and Latinos (Latinos experience a greater penalty related to four-year college enrollment when their parents do not have school savings on their behalf) *Sample by Income*: None
6.	The role of savings and wealth in reducing "wilt" between expectations and college Attendance				
	Elliott & Beverly (2011a)	Net worth; Categorical net worth: negative (< $0 - household liquid assets are less than unsecured debt), modest ($0 - $10,000), and high (≥ $10,000); Children's savings (Children's basic account;	*Methods*: Hierarchical Logistic Regression; *Data Set*: Panel Study of Income Dynamics (PSID); Child Development Supplement (CDS) & Transition to Adulthood	4yr college attendance	*Full Sample*: Net worth is not significant; Parental school savings is not significant; children with basic savings are 7 times more likely to attend a 4-year college than children with no account; Children

		Children's school savings; no account); Parents' savings for children	(TA); Sample restricted to Black and White youth who expected to graduate from a four-year college; *Longitudinal*: Baseline measured at mean age of 15 or older in 2002; Outcome measured mean age of 18 or older in 2005; N = 333		with school savings are 4 times more likely to attend a 4 year college than children with no account *Sample by Race:* None *Sample by Income*: None
7.	The role of assets in improving college attainment among Hispanic immigrant youth in the U.S.				
	Song & Elliott (2011)	Parental school savings; Homeownership	*Methods*: Binary logistic regression; *Data Set*: Children of Immigrants Longitudinal Study (CILS); Second-generation Hispanic youth only; *Longitudinal*: Baseline variables measured ages 12 or older in 1992-1993; Outcome measured at ages 23 or older in 2001-2003; N= 717 *Country of Origin*: U.S *Randomized control*: No	Any college enrollment	*Full Sample:* Homeownership is significant; Parental school savings is not significant; income is not significant After controlling other variables, Cuban children are more likely to attend college than Mexican children; *Sample by Race:* None *Sample by Income*: None

Table 2. Parents' College Savings and Parents' and Children's College Expectations

	Study	Asset Variables	Methods	Outcome	Key Findings	Mediation Findings
1.	Assets, expectations, and children's educational achievement in female-headed households					
	Zhan & Sherraden (2003)	Amount in savings; Recoded as no reported savings, $1-$2,999 and $3,000 or above	*Methods*: Ordinary least squares (OLS) regression; Baron & Kenny (1986) *Data Set*: The National Survey o Families and Househol *Longitudinal & Cross-sectional*: Variables of interest and controls measured 1987 to 198 also the outcome varial academic achievement measured at the same time; High school graduation is measured between ages; 18 to 26 in 1992 and 1995; N = 591 *Country of Origin*: U.S *Randomized control*: No	Mother's college expectations ; High school completion; Mother's report of child's grades	*Full Sample*: Having savings account of $3,000 or more is significantly associated with mother's college expectations; Home ownership is significantly related w/ mother's college expectations; *Sample by Race:* None *Sample by Income*: None	*Baron & Kenny findings*: The relationship between mothers savings and high school completion is partially mediated by mother's college expectations; The relationship between home ownership and mother's report of grades is partially mediated by mother's college expectations
2.	Assets and educational outcomes: Child Development Accounts (CDAs) for orphaned children in Uganda					
	Curley, Ssewamala, & Han (2010)	SUUBI project that provides *school savings*, financial education, and mentoring services; homeownership	*Methods*: Ordinary least squares (OLS) regression *Data Sets*: SUUBI data	Children's college expectations (educational plans); Confidence in educational plans; Academic achievement (math,	*Full Sample*: Children in the experimental group are more likely to have positive changes in their education	N/A

			Longitudinal: A follow-up survey was conducted after 10 months following its baseline survey; N = 274 (experimental group=133; control group=141) *Country of Origin*: Uganda, Africa *Randomized control*: Yes	English, social studies, and science)	expectations (plans) and to be confident about achieving their educational plans in the future compared to their counterparts I the comparison group *Sample by Race:* None *Sample by Income*: None	
3.	Staying on course: The effects of assets and savings on the college progress of young adults					
	Elliott & Beverly (2011a)	Net worth; Children's school savings; Parents' school savings for children	*Methods*: Logistic regressions; Baron and Kenny(1986) tests; Bootstrapping (Bollen & Stine, 1992) *Data Set*: Panel Study of Income Dynamics (PSID) *Longitudinal*: Baseline measured at mean age of 17 in 2002; Outcome measured mean age of 20 in 2007; N = 1,003 *Country of Origin*: U.S *Randomized control*: No	Children's college expectations; College progress (whether youth are currently enrolled in or have a degree from any college or graduate school)	*Full Sample*: Parents' savings and youth's savings are significant predictors for children's college expectations; Children who have school savings are about 3 times more likely to have high college expectations; *Sample by Race:* None *Sample by Income*: None	*Baron & Kenny findings*: Full mediation between parent's savings and college progress; Partial mediation between children's savings and college progress *Bootstrap findings*: Children's expectations carry the mediating effect of parents' school savings and children's school savings onto college progress.

4.	The effects of parents' school savings on college expectations and Hispanic youth's four-year college attendance					
	Song & Elliott (2012)	Parents' school savings	*Method* : Hierarchical linear modeling(HLM); Baron & Kenny (1986) *Data Set*: Educational Longitudinal Study (ELS):2002; Hispanic only *Longitudinal*: Baseline measured at ages 17 in 2002; Outcomes measured at ages 21 in 2006; N = 750 Country of Origin: U.S Randomized control: No	MV: Children's college expectations; Parental college expectations DV: 4yr college enrollment	*Full Sample*: parental saving is significant predictor of both children and parents' college expectations; *Sample by Race:* None *Sample by Income*: None	*Baron & Kenny findings*: Parents' college expectations and children's college expectations fully and partially mediate the relationship between parents' college savings and Hispanic children's 4yr college enrollment, respectively
5.	The effects of family college savings on postsecondary school enrollment rates of students with disabilities					
	Cheatham & Elliott (2013)	Parental school savings	*Method:* Logistic regressions Data sets: Educational Longitudinal Survey (ELS): 2002); Children in special education programs; *Longitudinal:* Baseline measured at ages 17 or 18 in 2002; Outcome	Students and parents' college expectations Any college attendance; 4yr college attendance	College savings is statistically significant predictor of both children and parents' college expectations *Sample by Race:* None *Sample by Income*: None	*Baron & Kenny findings*: Students and parents' expectations act as a partial mediator between college bonds and enrollment.

			measured at ages 21 or older in 2006; N = 756 *Country of Origin*: U.S *Randomized control*: No			
6.	Raising parent expectations: Can wealth and parent college accounts Help					
	Elliott & Wagner (2008)	Parent's school savings; Amount of savings; Net worth; Categorical net worth [less than $4,564/ $4,565-47,742/ $47,743-153,700/ more than $153,700];	*Method*: Logistic regression Data sets: PSID 2002 & Child Development Supplement (CDS) Cross-sectional study (2002): Children 12-18 years of age in 2002 who attend Public schools; African-American & White; N=1,071 *Country of Origin*: U.S *Randomized control*: No	Parent's educational expectations	Parents who have a school savings are almost twice as likely to expect their children to attend college as parents who do not have a savings. 92% of parent who have school savings expect their child to attend college compared to 77% of parents without school savings	N/A
7.	The effects of urban poverty on parents' expectation of their children's achievement					
	Pandey & Zhan (2000)	Parents' savings account; Savings amount; Investment income; Retirement account; Pension plan; Stocks & bonds; Home	*Methods*: One-way analysis of variance (ANOVA); Hierarchical regression *Data Set*: A survey of	Parent's educational expectations	*Full Sample*: None of the asset variables are significant; *Sample by Race:* None *Sample by Income*:	N/A

		ownership	inner-city residents in Chicago collected by the National opinion Research Center *Cross sectional*: Measured for parents who have children under 18 in 1986 to 1987; N = 604 *Country of Origin*: U.S *Randomized control*: No		None	

Table 3. Parents' College Savings and Parent-Child Discussions about College

	Study	Asset Variables	Methods	Outcome	Key Findings
1.	Racial inequality and college attendance: The mediating role of parental investments				
	Charles, Roscigno, & Torres (2007)	Parents' savings for college; Amount of parents' savings for college	*Methods* : Multinomial logistic regression; *Data Set*: National Educational Longitudinal Survey (NELS:88); All ethnic groups *Longitudinal*: Baseline measured at 8th grade in 1988 to 12th grade in 1992; Outcome measured at 2 years out of high school in 1994; N = 13,699; *Country of Origin*: U.S *Randomized control*: No	Parent-child discussions about college plans	Parental savings are significantly associated with parent-child college discussions. College discussions are also significantly associated with children's college expectations. *Sample by Race:* None *Sample by Income*: None